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THE AUTOMOBILE

WEEKLY NEW YORK—SATURDAY, DECEMBER 19, 1903—CHICAGO 10 CENTS

Course and Conditions of International Cup Race.

INTEREST in next year's international race for the James Gordon Bennett trophy has waxed keen of late, as the dates for the closure of the entry lists in the different countries drew closer and the question of the suspension of the race rule requiring all the contesting drivers to be members of the governing automobile body of the country they represent remained undecided. Owing to the difficulty confronting both the German and American automobile clubs of securing entries from among their members, the German club made formal application to the race committee for a suspension of the rule in order that the professional drivers might be employed by the German manufacturers who desired to enter their cars, and the American club added its request to the same application for similar reasons. Because American roads are bad and State and local restrictions prevent long-distance speeding on the roads, racing in this country has been confined to horse race tracks, and the character of the competition has unavoidably developed our best and most fearless drivers from among those employed by manufacturers exclusively to race, or as designers and shopmen, and these men are not members of the Automobile Club of America. Our national industrial characteristic that almost compels the men engaged in managing the large automobile plants and retail establishments to devote their whole attention to business to the exclusion of indulgence in competition in the pastime of racing and in the social pleasures of club life, at least during the early stages of the upbuilding of an industry, has not tended to produce a class or set of men here occupying a similar position to that held by such French and English drivers as Henri Fournier, René de Knyff, Maurice Farman, Charles Jarrott, S. F. Edge, and others who are members of large retail automobile establishments and at the same time are members of the controling clubs and expert racing men. Among the few in America holding nearly similar positions are Percy Owen, C. G. Wridgway, F. A. La Roche and Kenneth A. Skinner, and two of these are representatives of French cars. While we have plenty of manufacturers who are club members, very few of them have given sufficient attention to racing to have become expert drivers in competition or at maximum speeds on the roads, and probably none would feel warranted in giving the time that would be required to cross the ocean and take part in the international race. American drivers, therefore, must come from among those dealers named, the professional drivers, or the wealthy club members who are purely amateurs and have no trade connection.

One possible exception to this is the case of Alden Sampson 2nd, of Pittsfield, Mass., one of the younger members of the club

STEEP GRADE ON LEAVING WALBURG.

STRAIGHT STRETCH OUT OF LIMBURG.

and an officer of the Sampson Manufacturing Company, which is now making the Moyea cars. His entry, accompanied by the required guarantee fee of $600, was received by the Automobile Club of America on Monday, this being the first entry made to date. It is uncertain, however, who is to drive this machine, which is modeled on the lines of the Rochet-Schneider and will be of from 60 to 80 horsepower. "Wally" Owens, an expert and daring driver employed by Alexander Fisher, has been mentioned as a possibility, but he is not a club member.

H. S. Harkness, a club member and an amateur motorist and designer, has also signified his desire to enter for the international event, and last Saturday Manager L. H. Kittridge of the Peerless Motor Car Company, arrived in New York and announced that his company would enter a car to be driven by C. G. Wridgway, manager of the Banker Bros. Company retail establishment in New York. He did not, however, place the entry in the hands of the club officers nor advise them of his intention. There are several other possible entries that have been withheld pending the final decision by the international race committee on the proposed amendment of the anti-professional clause contained in rule nine of the Cup Race Rules. Among these is the Winton racer, with Barney Oldfield as driver.

At a meeting of the A. C. A. held last Friday, the board of governors discussed the amendment to the amateur rule proposed by the German club and voted to instruct its delegate, Clarence Gray Dinsmore, who is now in Europe, to cast a vote in favor of the amendment at the meeting of the international committee set for December 16, but to interpose objection to permitting persons who are not members of the clubs to enter cars to be driven by professional operators—in other words, to suspend the rule only in its application to the drivers and not to the owners of the cars. Following this action of the club, announcement was made by Secretary Butler that owing to a possibility of the adoption of the amendment, the day for receiving entries in the United States had been extended to Saturday, December 19.

Reproduced from *L'Automobile*.

PLAN OF APPROVED COURSE FOR CUP RACE, 1904.

Showing the Geographical Location in Relation to the Cities of Frankfort, Wiesbaden, Homburg and Limburg.

Both the French and English clubs have been opposed throughout to the suggestion that those who enter cars for the race be permitted to nominate professional drivers, and as the adverse vote of only one club is sufficient to defeat a proposed amendment, the chances of its adoption seemed very small. Secretary J. W. Ord, of the Automobile Club of Great Britain and Ireland, is quoted as saying:

"As a representative of the Automobile Club of Great Britain, I shall oppose the idea tooth and nail. Are we going to reduce the classic event of automobiling to a mediocre thing, with men taking part in it of the standard of mere jockeys? I am sure that is far from the idea the donor of the international cup had in mind when he offered the trophy for the encouragement of automobiling. Fancy what would be the result if some paid mechanic should win the cup! A point which the Automobile Club of America does not take into consideration is that the club cannot elect a member for the specific purpose of driving a car in the event and then kick him out immediately afterward. But, if they should not intend to put him out, how are they going to maintain anything like social status for their club? A club

VIEWS FROM THE BRIDGE AT LIMBURG. On the International Cup Course.

such as ours is necessarily more or less of a social organization and, of course, it is impossible to admit to it persons who are absolutely outside the pale of society."

Chevalier René de Knyff, when interviewed at the international automobile exhibition now in progress in the Grand Palais, in Paris, made the objection that the services of the professional drivers might be bought by the highest bidder and bring disrepute upon the international event, although the professional driver might be as honorable and have as good a social standing as any amateur operator and club member who could be nominated.

There has also been a pronounced sentiment, since the Belgian, Jenatzy, won the trophy last July for the German club in a Mercedes car loaned by the American sportsman, Foxhall P. Keene, against the cars entered by one nation being driven in the event by citizens of another country, and the announcement that the two Belgians, Jenatzy and Baron de Caters, have again been selected to operate the German cars next year has called forth unfavorable comment, which was expected to be manifest at the meeting Wednesday of the international race committee in the form of a proposed amendment of the rules.

Eliminating Trials.

It is reported that three of the drivers for the five Napier cars entered for the British eliminating trials have already been selected and their nominations sent to A. C. of G. B. & I. They are S. F. Edge, Mark Mayhew, vice-president of the club, and John Hargreaves.

France and Belgium may hold their eliminating trials on the Circuit des Ardennes course at the same time, and it has been proposed that the American trials also be held with them, which would necessitate the sending abroad of all the cars entered and their drivers early in the season. The governing automobile club in Algeria has offered the Automobile Club of France a course for its trials in Algeria in event of the French authorities forbidding the trials at home.

S. F. Edge, who won the Gordon Bennett trophy by a fluke in 1902, said regarding the action of the German and American clubs, according to a *Herald* dispatch:

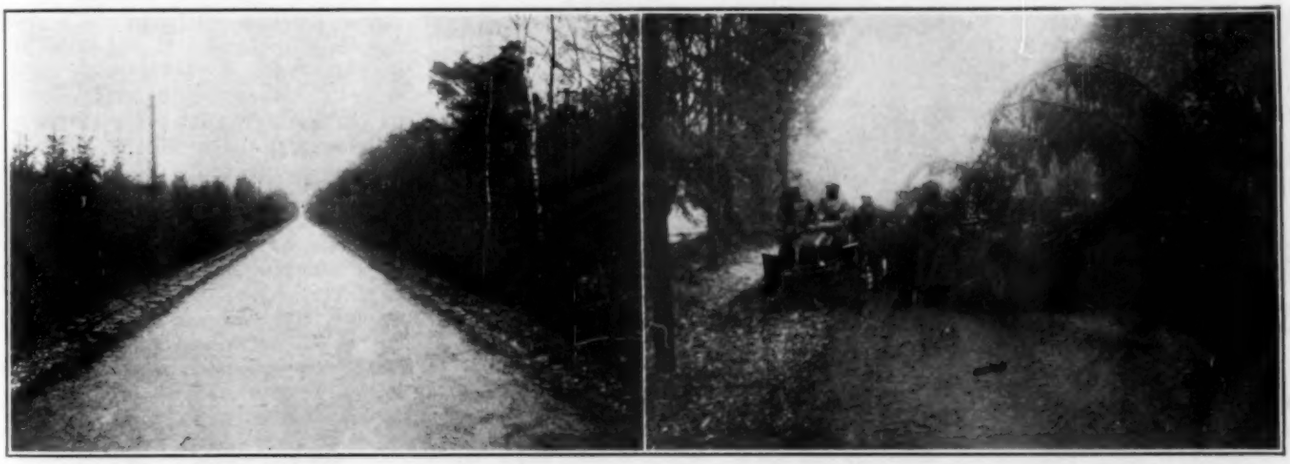
"It is one of the most serious mistakes ever made with regard to the competition. Any alteration of the rules which tends to bring into the race persons who depend on racing is wrong. My feeling would be that no automobile race should be open to trade drivers. When a man knows his bread depends on the winning of a race, that man is very apt to use any means in his power to become the victor. In some cases it undoubtedly is a fact that such a man would not hesitate at the employment of unfair means if the way were not open otherwise.

"Suppose a driver should achieve a reputation as the best driver in the world. Why, America would be after him, France would try to get him, England might want him and so on, and he would be sold to the highest bidder. I am aware that the question might be raised as to whether M. de Knyff and myself might not be called professionals in the sense that we are automobile manufacturers. Still, we do not exactly drive for a living. I am sure that M. de Knyff, as well as myself, would be glad if we could have our places filled, and we only drive in races because this may help to keep up the interest. I hope the time will come soon when we ourselves shall not have to drive."

All reports from the automobilists who have driven over it agree that the Saalburg course, near Homburg and Frankfort, selected by the German club as the most suitable for the race and approved by Emperor William, is an ideal course for the great event with the single exception of several sharp turns some of which are at the bottom of long down grades. The course is an irregular circuit, as shown in the accompanying map, and measures 139 kilometers 400 meters (about 87 miles), which is a trifle short of the distance required by the race rules. The main distances are as follows: From the starting and finishing point at Saalburg to Weilburg, 37 kil. 700 m.; Weilburg to Limburg, 23 kil.; Limburg to Neuhof, 28 kil., 600 meters; Neuhof to Königstein, 30 kil. 700 m.; Königstein to Saalburg, 19 kil. 600 m.

Nature of the Course.

The roads lie in one of the most prosperous and beautiful sections of the empire, abounding in mountains and great, gloomy forests, with picturesque ruined castles crowning almost all the eminences. The roads, which are nowhere less than 10 meters wide and in some long stretches as wide as 15 meters, are excellently kept up with the use of a superior quality of broken stone that presents a gritty surface even in wet weather. The testimony of Georges Prades of *L'Auto*, and Henri Fournier, who examined the course, is of value on this last point, as they traversed the roads in weather alternating between snow and rain, during which the heavy wind blew several trees across the way. In general the grades have been well engineered and the main turns are at right angles, so that in all respects the roads followed by the course are equal to the best French highways. The several sharper turns, however, are very dangerous and will require the utmost skill on the part of the driver, of whose ability the race will be as much a test as of the qualities of each competing car. A quick eye, cool judgment and fearlessness rather than excessive speed will be the requisites that will win. Some of the worst turns are to be reduced before the race comes off, but even so the competing cars will need in addition to general excellence and speed, to be equipped with reliable steering mechanism, to have an engine that will respond almost instantly to the throttle, slowing down and picking up quickly without the necessity of throwing out the clutch, and above all a superabundance of brake power. It is believed that the very difficulties of the course in these respects will tend to result in im-



THROUGH THE WOODED DISTRICTS. A PINE FALLEN ACROSS THE WAY.

provements that are of utmost importance in a safe touring car.

Cable dispatches from Paris received Wednesday evening announced that the international committee which met on Wednesday to discuss proposed amendments to the race rules decided to allow the clubs representing the several nations to nominate whom they desire to drive the cars in the race next summer. This decision, which settles favorably the question of professional drivers, came as a surprise to officers of the A. C. A., as it was believed the opposition of the French and English clubs would prevent any change of the amateur rule.

As a result of the decision, which was immediately cabled to the A. C. A. by Clarence Gray Dinsmore, who represented it at the meeting, Alexander Winton said in Cleveland Wednesday night that he would enter a new Winton racing car, whose construction has already been begun, and will name Barney Oldfield to drive it.

General Manager Joy of the Packard Motor Car Company of Detroit, also said that his company would probably enter a car to be driven by Charles Schmidt.

The meeting in Paris was attended by representatives of the French, English, German, American, Belgian, Austrian, Swiss and Italian clubs.

The rule regarding the length of the course was amended to require a length of only seventy-eight miles, which makes acceptable the Saalburg course in Germany.

RIKER SAYS ONLY FREAKS CAN WIN THE BENNETT CUP.

Asked in regard to the possibility of the Locomobile Company of America taking part in next year's cup race in Germany, A. L. Riker, a few days ago, gave emphatic expression to his opinion that racing under the present rules for the International or Gordon Bennett Cup is both dangerous and useless.

"Nowadays," said Mr. Riker, "they put a 100-horsepower motor into a 1,000-kilo machine, which in the nature of things is barely able to support it. It is then simply a question of the nerve of the driver, who knows that he takes his life in his hands. After the race the machine is utterly useless for any practical purpose, if indeed it is not ready for the scrap-pile. If the rules were amended to limit not only the total weight of the car, but also the proportion of weight put into the motor, or better the cylinder capacity, the race would once more serve to encourage rational design, as it was intended to and as at first it did. With the rules thus amended we would gladly compete, but we do not care to waste our money building freaks."

SHOW AT GRAND PALAIS OPENED WITH POMP.

First Cabled Accounts Indicate Immense Popular Success—But Few Innovations in Design—One American Exhibit.

MOTOR BOATS NOW A STRONG FEATURE.

The annual French automobile show was opened in Paris on December 10 under the most favorable and enthusiastic circumstances, and it promises to be the center of attraction in the automobile world until Christmas time brings it to a close.

At 10 o'clock on Thursday morning, amid the martial strains of the Marseillaise," President Loubet, accompanied by a ministerial escort, entered the main door of the gaily decorated Grand Palais, where the exhibition is being held, and shortly thereafter pronounced the great show open.

The receiving party, stationed near the main entrance, included prominent leaders in the industry of France, as well as Baron de Zuylen, president of the Automobile Club of France, and Gustave Rives, director general of the exhibition, and many other notables.

Throughout the forenoon the great building was filled with an enthusiastic throng that had patiently waited for hours outside before the doors were opened. By the middle of the afternoon the crush became almost unbearable, and at 4 o'clock the police found it necessary to close the great doors on the Avenue Nicolas, turning thousands of people away.

The exhibition stands are all most elaborately decorated and many of the cars shown are marvels of luxury and elegance. A distinct novelty is an automobile train, which includes a 40-horsepower motor equipment which is connected to each axle of each car. A correspondent suggests the possibilities of a millionaire traveling over the country in his private road train, while enjoying the independent comforts afforded by his own luxurious dining, sleeping and baggage cars.

The only cars of American manufacture on view are Oldsmobiles, which are exhibited by the English agency. A new Mercedes car of ninety horsepower, the property of W. K. Vanderbilt, Jr., is a center attraction, as is also an 18-horsepower Mercedes landaulet, owned by F. G. Bourne, the commodore of the New York Yacht Club, who has consented to the exhibition of this interesting vehicle at the January automobile show in New York. Another Mercedes car, that is always surrounded by an admiring crowd, is Clarence Gray Dinsmore's racer, which won the Gordon Bennett Cup in Ireland, last July.

The Wolseley Tool and Motor Company, and the manufacturers of Napier cars are the leading English exhibitors.

The tendency of foreign automobile builders, as evinced by their exhibits, is to build moderately powered cars, ranging from 18-horsepower. Weight has been reduced by the extensive use of pressed steel and the studious avoidance of complicated mechanism, so that there is a high average of power efficiency per pound of weight, making extremely high speeds possible, even with motors of moderate power.

Charron, Girardot and Voight are showing a new lamp which is mounted in front of the car and arranged to move automatically when the steering wheel is turned, throwing the light directly in the line of travel.

Automobile boats claim a large share of the attention of the visitors. In two years' time the exhibition of high-powered gasoline launches has grown from an incident to a feature, and these interesting craft now have their own group of enthusiasts and patrons.

A large contingent of American visitors has been in daily attendance during the early days of the show, including Clarence Gray Dinsmore, D. M. A. Bates, H. B. Hills, A. Bowen, Ralph Hickox, F. A. La Roche and C. D. Cook of the American Darracq Automobile Company; Messrs. Josephs and Otto of the Auto Import Company; Norris M. Mason of the Société Franco-Américaine d'Automobile, New York branch; E. T. Birdsall of the Standard Automobile Company; Frank Eveland of A. G. Spalding & Bros.; Kenneth A. Skinner, the American De Dion agent; F. Seager of the Olds Motor Works; Sidney B. Bowman and Alexander Fisher, and David J. Post of the Veeder Manufacturing Company.

To Enjoin Use of Edison Name.

WASHINGTON, Dec. 14—Sometime since W. Leslie Edison, of the Edison Automobile Station, filed suit for an injunction against the Edison Automobile Company of Washington, and David K. and George F. Joslin, to restrain them from using the name of Edison. An amendment to the original bill of complaint has just been filed in the District Court, in which young Edison alleges that as soon as he became aware of the nature of the representations made to him, he refused to have anything further to do with the business begun by the defendants, and refused to recognize the legality of the Edison Automobile Company of Washington. Edison further declares that neither he nor his father, Thomas A. Edison, has any connection with the concern, nor has it the right to use the name of the latter.

It is understood that proceedings have been begun in New Jersey by Thomas A. Edison and the Edison Storage Battery Company asking for a permanent injunction against all the defendants in this suit.

Mail Delivery by Tractor Truck with Use of Old Rolling Stock.

Government Sanction Obtained for Eighteen Months' Test of Electric Tractors in the Philadelphia Service.

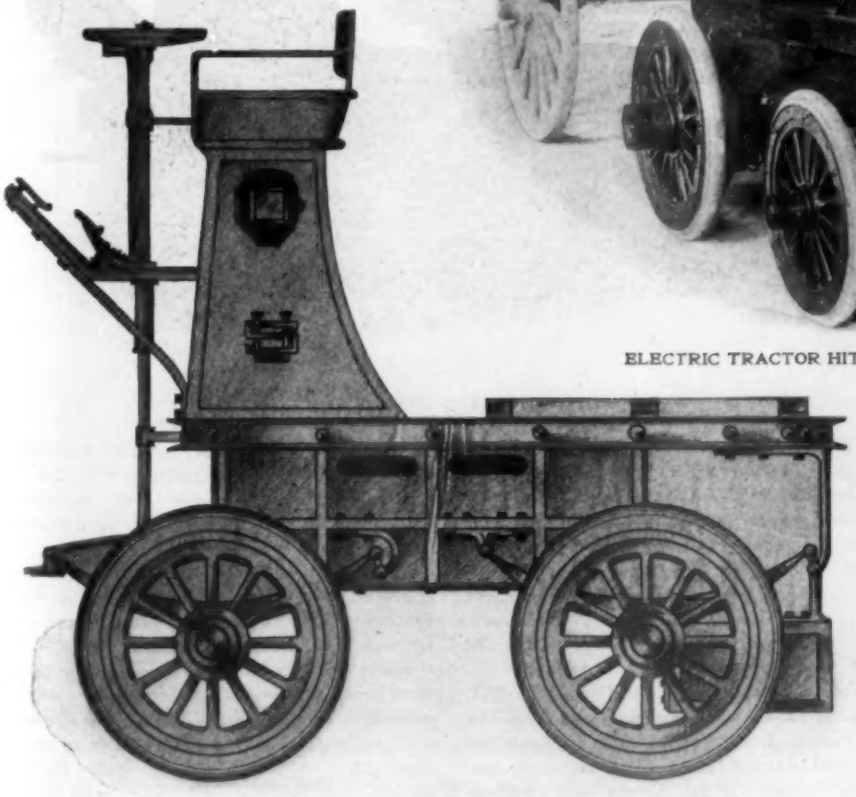
Philadelphians and others are watching with much interest the first attempt under government contract to transport the mails of the city by automobile, which, if successful, will probably result in radical changes in the service, including the general substitution of power trucks or vans, for the horse-drawn vehicles now in use in the postal transportation departments of large cities.

The contract under which the automobile company is at present operating is one that is usually called an emergency agreement, which the Post Office Department makes with a bidder when it is necessary to fill out a break in an unexpired term—the full period of which would be four years—and in this case covers the transportation of mail matter between the General Post Office, the Bourse and the two principal railroad stations, for eighteen months, dating from November 1, of this year.

The Post Office Department entered into this eighteen months' agreement because a series of exhaustive preliminary tests, which were made last summer, proved that time could be saved and the efficiency of the service improved by adopting motor vans, especially on certain delivery lines. As the Department could not award a four years' contract, based on these satisfactory tests, even if such was the ultimate intention, until the expiration of the last four years' contract which terminates when the eighteen months' emergency agreement with the motor transportation company, covering the route named, comes to an end.

The preliminary tests referred to, which were made under the personal supervision of the superintendent of Station B, proved that one motor vehicle performed the services of two horses and wagons, and two mail collectors, in the time consumed by one horse and wagon over one-half the trip. It was then estimated that seven automobile mail vans could perform better service than twelve horse-drawn collecting wagons, besides requiring the services of five less men. Over certain routes the automobile vans showed in a particularly favorable light; for instance, between the general post office and Station J—a combination trolley car and horse service—as the street cars cannot approach the Post Office dispatching platform within one hundred and seventy-five feet, necessitating a horse haul of that distance, and one more handling of the mail sacks, with the attending extra danger of loss and damage. Neither can the street car approach within one block of Station G, this necessitating a second wagon service for five hundred feet, and a second objectionable handling. The

ELECTRIC TRACTOR HITCHED TO U. S. MAIL WAGON.



THE TRACTOR AS USED WITH COMMERCIAL TRUCKS.

motor vans were able to run direct from the dispatchers at the General Post Office to the door of the sub-station, at the same time avoiding obstructions in the streets, so that the intervening distance could be covered in much less time.

The particular system of motor traction involved in tests made in Philadelphia, to the promoters of which the present eighteen months emergency contract was awarded by the Post Office Department, seems well adapted to the service required as it does not necessitate the purchase of additional vehicle bodies. It is a motor tractor system, possessing some original features, and the general appearance of one of the tractors, and that of the mail van to which it is attached, is shown in the illustrations herewith.

This tractor, which has been developed by Rudolph Hunter of Philadelphia, is built by the Electric Vehicle Equipment Company of that city, which states that trucks are now in process of construction for many large corporations, including The London General Omnibus Company, London; Standard Oil Company, New York; United States Express Company, New York; The Globe-Wernicke Company, Cincinnati; The Anheuser-Busch Brewing Association, St. Louis; The Pabst Brewing Company, Milwaukee; Strawbridge & Clothier, The United Gas Improvement Company, The Friedberger Mfg. Co. and the Stewart Bread Company, all of Philadelphia.

As shown in the illustrations, the power mechanism is mounted on four wheels, which carry the battery, motors, steering mechanism, controllers and driver's seat, the whole forming an independent power unit, like an electric locomotive, the only difference being that it is attached to the drawn vehicle by means of the usual king-bolt instead of by a coupling. In converting a horse-drawn vehicle to an automobile it is only necessary to remove the king-bolt, taking away the usual front wheels and shafts, and substituting the tractor, replace the king-bolt, the upper half of the wagon turntable resting on the lower half of a turntable mounted on the tractor. The motors are each of five horsepower, chain-driving to the rear wheels, Renold's block chains being used. The battery includes forty Clark cells, and is of 265 ampere hour capacity. The battery and motors are designed to carry a considerable overload, when necessary, without injury. The controller is designed for four forward speeds, ranging from three to eighteen miles, and reverse. The wheels are of wood, twenty-four inches in diameter, fitted with solid rubber tires.

Double band brakes, each two and one-half inches wide, apply on twenty two-inch drums attached to the rear wheels.

SIDE VIEW OF TRACTOR TRUCK AND MAIL WAGON AS USED IN PHILADELPHIA.

Cause of Intermittent Sparking

Probably many users of gasoline vehicles have been puzzled by the seemingly erratic behavior of the spark under certain conditions. The motor will run perfectly, missing no explosions under no load or a light load, but as soon as it is required to pull a bit it misfires and then stops. The explanation is to be found in a weak spark, due to a spent battery or poor connections. When the motor is running under no load, it either throttles itself, so to say, by racing, so that less than a full charge is taken in, or it is throttled by the operator to keep it from racing. In either case the compression is so low that the spark has no difficulty in jumping; whereas as soon as the speed is pulled down by a load, with the throttle wide open, the compression becomes too high for the enfeebled current to overcome.

This behavior of the motor is easily confused with that due to a badly-adjusted carbureter, but can always be distinguished by watching the auxiliary spark gap. If there is none, it can be supplied for the time being by twisting the secondary wire around the plug and bringing its end within about one-sixteenth inch from the terminal.

New York dealers report many inquiries for runabouts for Christmas presents.

Rosy Views on Airship Matters

While THE AUTOMOBILE cannot look upon the numerous recently accomplished, as well as several contemplated, experiments with motor balloons and aeroplane flying-machines as being particularly promising of practically useful results in the near future, others take more hopeful, nay, sanguine, views, and it is indeed undeniable that the very fact of a number of persons occupying themselves with aerial problems, even if they have not yet struck the keynote to the final solution, creates a possibility of eventual success, and a possibility which would not exist if nobody cared for the problem. "Something is bound to come from so much serious endeavor;" in this phrase is signalized the real defence and justification of the present doings of the various Aero Clubs of the world.

From this standpoint it seems possible to look upon even the accidents that befall aeronauts in a pleasantly optimistic spirit. To give readers of THE AUTOMOBILE the benefit of this optimism—always pleasanter in tone than the comments of the carping critic—together with an account of the most recent event in aeronautics, we present herewith photos received from our photographic correspondent in Paris together with the friendly comments of the *Automotor Journal* on the collapse of "Le Jaune" (the Yellow) on its last trip.

STORY OF LEBAUDY BALLOON'S LAST TRIP.

Everyone interested in the progress of aerial navigation will have read with something of a sense of personal loss of the disaster which occurred to the Lebaudy airship on Friday last, just as it was arriving at the Headquarters of Military Ballooning at Chalais-Meudon. After its triumphant voyage to Paris from Moisson the airship has been lying in state—an object of the greatest interest to all classes in Paris, in the Galerie des Machines on the Champs de Mars. On Friday, the weather being in the morning apparently favorable and the overhauling of the airship having been completed, it was decided to continue the journey and pay a visit to Col. Renard, the pioneer of the navigable airship movement, at the aeronautical headquarters at Meudon. The wind, though not very powerful at the start, was fitful and contrary, but in spite of this, the airship, after having been brought out from the building and the engine started, rose majestically from the ground, and sailed away more or less against a stiffish wind in the direction of St. Cloud, crossing the Seine, and headed for the wooded valley in which Chalais-Meudon is situated. The indomitable M. Juchmes had considerable difficulty in keeping the airship up to the wind, and on passing the Orphanage of Galliera his difficulties were quite exciting to watch. From observations reported from the Eiffel Tower, it was known that the wind was blowing still stronger higher up, so the aeronaut descended as near the ground as possible, some of the trail-ropes actually grazing the roof of the Orphanage as it was passed. Everything went well, however, until just as the airship was about to descend on the tree-studded lawn at Chalais-Meudon. M. Juchmes had already stopped his motor, and Col. Renard with a number of visitors, including MM. Paul Lebaudy and Julliott and Mesdames Juchmes and Ray, came forward to meet it. A number of the soldiers of the Balloon Department rushed forward to grasp the trail ropes of the airship, but M. Renard, anxious to see the vessel descend to the ground, unfortunately restrained them. At this moment, when the car was some eighteen feet from the ground, a sudden squall of wind caught the airship and drove it against a lofty tree. The envelope of the gas-vessel, being subjected to considerable pressure, as our readers are aware, to maintain it taut and rigid, was caught and ripped by the branches, and exploded at once, the gas with which it was inflated escaping instantaneously, and down came the car with the ruined envelope on top of it. Fortunately both aeronauts were uninjured, and were extricated from the debris without much difficulty. It is hardly possible to say at present how far the

"LE JAUNE" AFTER GRAZING A TREE AT THE LANDING.

LAUNCHING LEBAUDY'S BALLOON AT MACHINERY HALL, PARIS.

airship can be repaired. The conical ends of the gas-vessel, at any rate, are uninjured, and the car is practically undamaged, but the propeller shaft is seriously injured, and the aeroplanes forming the tail, badly twisted—not so badly, however, it is thought, but that they can be put right. In any case we fear that the records of the Lebaudy for this year are over. Everyone will congratulate the two intrepid aeronauts on their providential escape, and sympathize with them and M. Lebaudy on the misfortune. It was an accident pure and simple, and does not really redound in any way to the discredit of the designers and navigators of the hitherto brilliantly successful machine, but it does show that airships of this class must be very careful in selecting their ground when alighting. In this respect they differ from the ordinary spherical balloon in which the tension of the gas envelope is nothing like so great as in an airship, which has to be kept rigid by means of an internal balloonette in order to prevent distortion. It is probable, we understand, that in any case a Lebaudy No. 2 will be built, and there is reason to suppose that either the propellers will be increased in size, and their pitch slightly altered, or a single large propeller substituted for the two that have already been employed. When we consider the thirty-two not merely successful but record journeys which this first airship constructed by M. Julliott has made, we can only hope that he will at an early date have an opportunity of showing to what extent he has profited by the brilliant experience furnished by Lebaudy No. 1 and design a vessel which shall even surpass the records which that craft has made. After all, the accident is only in aerial navigation similar to what must have happened a thousand times to sailing vessels before harbors were constructed, and would happen frequently now, even with steam vessels, if harbors did not exist.

MORE THAN 3,200 AUTOS REGISTERED IN MASSACHUSETTS.

BOSTON, Dec. 14.—The Massachusetts Highway Commission has licensed 3,872 operators and registered 3,206 automobiles in the three and one-half months that the automobile registration and licensing law has been in force. Professional chauffeurs to the number of 678 have been licensed. Applications are coming in slowly now, but the Commission anticipates a considerable increase after the first of the year when people begin to purchase the new models. Beyond a circular which was issued some time ago by the anti-automobile forces, nothing has been done that would indicate further automobile legislation. Automobilists are satisfied with the law and will probably not ask for changes this winter.

GRANGERS VOTE TO BACK BROWNLOW'S ROAD BILL.

Opposition of Farmers to Building of Roads Disappears on Condition that Federal Aid is Secured.

PRESIDENT'S MESSAGE ALSO FAVORS BILL.

Good roads advocates have for many years recognized the absolute necessity of securing the co-operation of the farmers in any movement for wagon road improvement before any actual extension of the good roads mileage can be realized. And it is for this reason that so much of the work of the good roads associations has been of an educational nature and that the establishment of the Office of Public Road Inquiries was secured as a branch of the Agricultural Department. It was found extremely difficult, however, if not positively impossible, to prevail upon the farmers to consent to the abandonment of the old custom of "working out" their road taxes by giving two or three days' work of a man and team in lieu of a cash assessment.

GOOD EXAMPLES CONTAGIOUS.

The opposition of the agricultural element arose from the fact that up to ten or twelve years ago the whole cost of road improvement in the rural sections fell upon the abutting property owners and the county, and the burden was so heavy as to make the cost of building of macadam or stone roads prohibitive. It was not until State aid in highway improvement was proposed and adopted in New Jersey, Massachusetts, New York and Connecticut that farmers began to look with favor upon the matter of "hard" roads and to pull with the good roads advocates instead of against them. Under the State Aid laws the cities and towns have to pay a large proportion of the cost of building macadamized roads, the abutting property owners paying only one-quarter, and the farmer is now as anxious as any one to secure good roads.

In the proposal of a National Aid road law, the owners of agricultural land see a further opportunity to get good roads without too heavy a draft upon their own resources, and it is not surprising that they should approve of a national law providing for the application of governmental funds to highway work upon similar lines to those of the State Aid laws. But as the farmers are the controlling factors in much of the State and National legislation, one of the most hopeful signs in the good roads movement was the action of the old, conservative farmers' organization, the Patrons of Husbandry, commonly called "the Grange," at its national meeting in Buffalo recently, when it passed resolutions endorsing the national aid movement as follows:

WHEREAS, The United States Government has expended vast amounts of money in the improvement of the transportation facilities by river and harbor appropriations and has donated vast tracts of valuable land in aid of the construction of railroads,

Therefore Be It Resolved, That the National Grange favors the inauguration of a National policy for road improvement through the co-operation of the Federal and State governments, suggesting that the general features of what is termed the Brownlow Bill embody, with some modifications, the essential features of such a policy.

Resolved, That we call upon all State, Pomona and Subordinate Granges to take prompt and vigorous action upon this important matter; and we hereby authorize the Legislative Committee of the National Grange to inaugurate and conduct an aggressive campaign in securing Federal aid for improvement of highways. Also that our Legislative Committee be authorized to gather all the information possible regarding the road laws and systems of road building in the several States, and that such information be published in such form as the Committee deems best.

These resolutions will set in motion a vast force that moves slowly but irresistibly; for the National Grange usually gets what it goes after, whether it is a State freight rate law, or the creation of a national Department of Agriculture. This is therefore considered by far the most important endorsement the Brownlow Bill has yet received.

ROADS AS CIVILIZERS.

Another recent endorsement of highway improvement that pleases the good roads advocates was contained in President Roosevelt's message to Congress in connection with the rural free mail delivery regarding which the President said:

"No governmental movement of recent years has resulted in greater immediate benefit to the people of the country districts. Rural free delivery, taken in connection with the telephone, the bicycle and the trolley, accomplishes much toward lessening the isolation of farm life and making it brighter and more attractive. It is unhealthy and undesirable for the cities to grow at the expense of the country; and rural free delivery is not only a good thing in itself, but is good because it is one of the causes which check this unwholesome tendency toward the urban concentration of our population at the expense of the country districts.

"It is for the same reason that we sympathize with and approve of the policy of building good roads. The movement for good roads is one fraught with the greatest benefit to the country districts."

ECONOMY NOT FOREMOST.

The coupling together of these subjects by the President is significant. It will be noticed that he commends the policy of building good roads and the extension of rural free delivery for the *same reason*. While he does not recommend that Congress take any action on the road question, it is a fair inference from what he says that it

is as much the duty of Congress to help the people build good roads as to increase their postal facilities. And this view is greatly strengthened when we consider that good roads are absolutely necessary to the general establishment of rural free delivery.

MILWAUKEE MAN TO BUILD AIR SHIP ON SUBSCRIPTION PLAN.

MILWAUKEE, Dec. 14.—C. F. Hoffman of this city will be one of the competitors for the prize of $200,000 offered by the directorate of the St. Louis Exposition for the most successful aerial navigator, provided plans he has formulated for perfecting his scheme do not miscarry. He has worked on an airship along original lines for several years past. As the work has progressed he has secured patents on the more important mechanical devices that are to enter into the construction and operation of the airship, and when it is completed letters patent will be taken out and a public exhibition given.

In order to put the invention into practicable form, Mr. Hoffman will attempt to organize a society, the fee for admission to which will be $5. The members of the society will share pro rata in the prize, should the Milwaukee inventor be so fortunate as to win it. Books will be opened in the near future in different parts of the city where drawings of the machine may be inspected and memberships received.

Mr. Hoffman's airship depends for buoyancy upon what resembles a series of box kites rather than upon a balloon. A dynamo will furnish the motive power and the first experiments will be made with a two-horsepower dynamo. [What will drive the dynamo, deponent sayeth not.—Ed.]

WOULD REQUIRE MOTORISTS TO YIELD RIGHT OF WAY.

CINCINNATI, Dec. 14.—The rights of Ohio automobilists are seriously threatened by a bill which State Representative-elect Dudley Wayne, from this county, proposes to introduce when the Ohio Legislature convenes next month at Columbus. Wayne's proposed bill will provide that on public highways in this State, automobiles must yield the right of way to every other kind of vehicle.

This bill, if enacted into a law, will make it an easy matter in most cases to shove the blame onto automobilists when damage suits are filed in the courts after accidents in which automobilists may be involved, and will place it within the power of every driver of a wagon or carriage to force the operator of an automobile into the ditch without allowing him any hope of redress. Wayne claims that his bill is inspired by a series of recent accidents on the country roads near his native village of Harrison

New Route from Chicago to New York

Automobile tourists traveling east from Chicago, or other central points, have usually followed one of two well known routes, either crossing the northern part of Indiana and Ohio and then skirting the southern shore of Lake Erie to Buffalo and from there to Albany and New York by way of Rochester and Syracuse, or, branching off at Erie, Pa., crossing New York State over the route of the late Endurance contest, but in the opposite direction. Mrs. S. E. York and party, while traveling from St. Paul, Minn., to Portland, Me., recently, deviated from these routes and crossed from Detroit to Windsor, Ontario, and toured through Canada to Niagara Falls, and thence across New York, while

NEAR SARNIA, ONT.

Alfred W. Church of Rockford, Ill., has established a third and new route by crossing Lake St. Clair by boat from Detroit to Sarnia, Ontario, touring from there to Kingston, a distance of three hundred and forty-eight miles, before re-entering the United States, passing through London, Woodstock, Hamilton, Toronto and Belleville, and from there to Cape Vincent by boat, reaching Albany by way of Booneville, Poland, Herkimer, Amsterdam and Schenectady.

While not the most direct route, Mr. Church's itinerary took him through a most interesting country, where the roads were in better condition than those on the American side of Lake Ontario, giving him in addition, an opportunity to visit several places of interest along the line of the Canadian Pacific Railway. The party was on the road eighteen days; four days were spent in Toronto, and three days among the Thousand Islands, making the net running time eleven days.

Instead of running down around the southern end of Lake Michigan, Mr. Church embarked at Chicago for St. Joseph, Mich., and drove across the State to Detroit. Heavy rains had turned the soft clay roads into lakes of mud, and traveling was necessarily slow and tedious during the early stage of the journey. The run from St. Joseph to Battle Creek was made almost entirely on the intermediate gear. One of the accompanying illustrations, which was taken near Jackson, Mich., is characteristic of the road conditions *en route* to Detroit. The trip across Lake St. Clair and up the river of that name was most enjoyable, and the party arrived at Sarnia, Ontario, well prepared for the flat country from there to London, among the oil and gas wells. The roads were in bad shape in the vicinity of Toronto, owing to the heavy vehicular traffic attending the annual Dominion Fair, but on the way to Coberg conditions improved. From Toronto to Coberg Mr. Church

ROAD AT JACKSON, MICH.

was accompanied by a party of friends in a Winton car. Lake Ontario was in full view from the top of every hill; the road was in excellent condition and the scenery along the shore of the Bay of Quinte was unusually attractive.

The closing days of the trip were spent in touring from Cape Vincent to Albany, and thence to Poughkeepsie, where the ferry was taken to Kingston on the opposite side of the Hudson.

On arriving in New York Mr. Church expressed himself as delighted with his first experience of automobile touring and with the excellent running of his car, a 10-horsepower Decauville, which he had recently purchased.

Lectures on Steam in Boston Course.

Third and Fourth Discourses by Parker H. Kemble Dealing with Engines and Auxiliary Machinery.

In the last two lectures in the Boston Y. M. C. A. Automobile School the subject of steam vehicles was continued, Mr. Parker H. Kemble, the lecturer, taking up first, "Engines," and second, "Auxiliary Machinery." The lecture on "Engines" was in part as follows:

Steam engines may be classified as:

1. Reciprocating; that is, where the action of the steam is intermittent, acting first in one direction and then in the opposite, and where the alternating movement is turned into rotary motion by some outside mechanism; and

2. Rotary; that is, where the rotary motion is produced within the cylinder itself under the direct action of the steam.

The ordinary engine such as used on a steam locomotive may be taken as an example of the former and a steam turbine as representing the latter. Taking up the reciprocating first we find the following kinds applied to motor cars: simple and compound; single acting and double acting. Steam can be used in an engine in two ways, with expansion or without expansion.

In the earlier forms of the simple engine, steam was allowed to follow the piston the full length of the stroke and then exhausted into the air, the pressure against the piston being the boiler pressure and remaining the same during the whole length of the stroke. This required that the boiler should supply a whole cylinder full of steam for each stroke of the engine. This was necessary with pressures of ten and twelve pounds to avoid unduly increasing the size of the cylinder. Steam has one peculiar property. It takes more heat to turn the water into steam than to raise the pressure after it has become steam. This being so, it is, of course, economy to use high pressure steam from the side of the coal pile. Roughly speaking the pressure of a gas varies inversely as the volume. Where steam is expanded in a single cylinder and then exhausted the engine is called a simple engine. No matter how many cylinders you place side by side it remains a simple engine as long as each cylinder gets its separate steam supply independent of the others. If two cylinders are used it is called a double engine and in that form is familiar as the usual engine on light cars.

Economy of High Pressure.

High pressure apart from the proportionate economy of fuel has another advantage. If you have only to partly fill the cylinder with steam at each stroke of the engine, a smaller boiler will do the work, and if the pressure be still further increased a smaller piston and cylinder will develop the same power. In order to get a better insight into the relation between pressure and size of cylinder, we will take up the formula of horsepower. When steam engines were first brought out the necessity arose for some standard by which to compare them. It was then figured out that a London dray horse could in one minute lift 33,000 pounds one foot high and this was called a horse power. The formula as applied to engines is $\text{I-Hp.} = \frac{\text{Plan}}{2\ 33{,}000}$ where P = mean pressure on the piston, A = area of piston, L = length of stroke in feet, N = number of revolutions per minute. Now, if you double the pressure, P, you double the power, if you halve A, the area of the piston, you halve the power, if you do both, the power remains the same, but your engine is smaller and lighter, as is also the boiler.

If the steam pressure is raised much above the point required to do the work, the exhaust or terminal pressure will be unnecessarily high and waste will ensue. In cases where economy of weight and space are the greatest factors this is accepted as the price of compactness and light weight. In large engines, however, where the amount of fuel and water consumed is large, and especially where all supplies have to be carried along, as in a vessel on salt water, a point is soon reached where the amount of fuel and water used begins to count.

Water Capacity.

In the first light steam runabouts, stops for water every fifteen or twenty miles were accepted as a matter of course, and until very recently simple engines running at high pressures and exhausting at a pressure far higher than was carried in the earlier steam boilers, were the only types in use. The inconvenience of having to water up every few miles, whether convenient or not, and the weight of the water tank and its contents became, as we grew more exacting with experience, a serious drawback to steam as a driving power. Three ways out of the difficulty were possible: 1, superheating, which made the steam more effective; 2, compounding the engine, which saved the loss or a part of it from the high exhaust pressure; and 3, the use of the condenser, which enabled the water to be used over. The first and second methods helped the fuel supply and the third the water tank.

In designing a compound to take the place of a simple engine the high pressure cylinder is usually made smaller and the low pressure larger. This brings about the necessary balance of power so that the cylinders work together. While superheating is not as effective with a compound as with a simple engine, it is of sufficient importance even with a compound to be highly desirable. The condenser probably makes the greatest showing of the three methods and is more effective with the compound than with the simple engine. Superheated steam—on account of the heat and high pressure—means a careful choice of lubricating oil and liability of trouble with packing. Compound engines present the complication of "simpling valves." These are used to turn a compound engine into two simple engines at starting or when extra power is required. Condensers mean extra pumps to handle the condensed water, and grease filters to clean out the cylinder oil and keep it out of the boiler. However, each and all of these are well worth the added complication and no car intended for more than purely local use should be without them.

Single Acting Engines.

Single-acting engines are those in which the steam exerts its force only on one side of the piston. Double-acting where first one side and then the other is acted upon by the steam. A single-acting engine only gives one-half of the power of a double-acting engine under similar conditions. It has, however, advantages which entitle it to a more general use than it has at present attained. One of the worst nuisances in a steam carriage is the necessity of packing around the piston rod, usually inaccessible, always hot, and scalding hot when needing adjustment. In a single-acting engine, the piston rod, piston rod packing and guides are all done away with and the steam engine assumes its simplest form. When the saving in weight due to the absence of these parts, and to the shorter frame required, is taken into consideration, two single-acting cylinders exerting the same power as one double-acting will weigh much less than twice the latter. Another advantage and a very great one is that the pressure, always being in the same direction, there is no tendency for crank and wrist pin brasses to leave the pins, and the bearings may be worn to such an extent as in a double-acting engine would cause an unendurable noise.

To take the place of the usual runabout twin-cylinder engine, four single cylinders would be needed. They would take up more room lengthwise but less in height. They would have more valve gear and more main bearings but would stand more abuse than their rival. Double-acting engines are at present the standard, and well deserve to be, as a more compact and powerful little engine than the present type of twin-cylinder engine would be hard to find. Compound engines can be built single acting as well as double acting.

The only valves that are in general use in motor car work to-day are the slide

valve or its descendant, the piston valve, for double acting, and the poppet or mushroom valve for single-acting engine. In regard to rotary engines but little can be said here. With the exception of some of the turbine design they do not seem to make their way. The latter for motor work with its varying speeds and pressure would not seem suitable.

In designing an engine for a motor car, after the general type has been selected, the proportions of bore to stroke, question of pressure and piston speed have next to be considered. The relation that these bear to one another can best be learned by a careful study of the horsepower formula given above. It should be borne in mind, however, that in any small engine, when double acting, 750, and when single acting, 1,200, revolutions per minute are probably the safe limits for continual working; that in high speed engines the stroke should not be much greater than the bore and that pressures over 350 pounds, steady, would bring trouble of their own. The transmission of power from the engine to the driving axle is either by chain, by shaft with beveled gear or by direct gearing. If only ideal conditions had to be taken into consideration I should rank chain first, then direct gear, and beveled gear drive last. But in actual practice the impossibility of protecting the chain from dust and grit places it at the end of the list. As regards the other two, the location of the engine decides, and that in its turn, is greatly influenced by the style of boiler and fashion of the day. Personally the convenience of access to an engine placed in front would make up for a slight loss in the extra gearing.

Auxiliary Machinery.

Of the auxiliary machinery of a motor car there is no part that will better repay care and attention than the lubricating gear. A liberal supply of oil or grease delivered at the proper time to the right bearing ensures ease of running and freedom from wear. The best method of lubrication is that which, while reliable, requires the least attention on the part of the driver. A lubricator consists primarily of a vessel to hold oil or grease and a means of conveying it to the bearing. The familiar oil can is probably the crudest form in use to-day. In practice the lubricant may be supplied in two ways. One is drop by drop, as in the common oil cup which may be placed directly over the bearing; or if the latter is inaccessible, the cup may be placed where convenient, and the oil led to the bearing by a pipe. In this case care should be taken to have the pipes large enough not to clog easily, and to avoid sharp bends which would prevent running a wire through the pipe occasionally to keep it clear. A second way is to supply the bearing by the splashing of the parts in an oil bath, or by pumping a continuous stream of oil through the bearings, collecting and straining it and then pumping it through again. To use either of these methods requires, of course, that the parts be so enclosed that the oil can be saved after passing through the bearing. The mechanical method has the further advantage of keeping the bearing clean, as the continual stream of oil prevents dirt or grit from lodging, and is also very economical as to quantity used. Furthermore, it acts independently of the driver and starts and stops with the engine.

Lubricating Methods.

There is one disadvantage in splash lubrication, namely that any dirt or grit that is in the splash chamber is held in suspension by the constant churning of the oil and given no chance to settle. The plan of supplying oil to the different bearings under pressure is, therefore, the better. Lubrication by grease is becoming more popular, and justly so. It is in a way automatic, as the warmer the bearing grows the faster the grease feeds. For the inside of the cylinder, steam cylinder, oil must be used; for the other parts a good medium weight oil such as lard oil, is as good as any. For ball and roller bearings in the wheels and axles vaseline or good grease mixed with a little graphite will prove satisfactory. For chains a good cleaning followed by a soak in hot grease and graphite is conducive to quiet running. In lubrication, as in many other things in life, individual preference affects results, or there would be no sale for most of the eight hundred different brands of lubricating oils in the market. Use plenty of oil, but keep the excess wiped off so that dust and dirt will not collect, and when you have a bearing to oil that only takes a few drops, put the nose of the oil can in the oil hole and press gently until filled. Don't hold it two or three inches away and squirt all over everything in sight.

Liquid fuels are at present in universal use on steam motor cars for pleasure use. They raise no dust, do not, or at least should not, smoke, and produce no ashes. They occupy less space than solid fuels and are more easily handled. Their disadvantage is high cost and ability, not liability, to explode. All liquid fuels are changed into a vapor form before being burned. This may be done by heating or by atomizing. By heating a gas is formed; by atomizing a fine mist or spray. Most burners on the market to-day belong to the heating class. In this country gasoline and kerosene are the two forms of liquid fuel adapted to motor car work. Of these gasoline is the most popular. It is cleaner to handle and easier to burn and requires less care. There are, however, several successful kerosene burners on the market, and the steadily rising price of gasoline, added to the greater safety of kerosene, are powerful factors in stimulating the development of this type of burner. Another factor is that kerosene may be found at every country store and in most every house.

All burners should be fitted with pilot lights or starters. These are in reality small burners where the heat necessary to vaporize the fuel is produced by a few drops of alcohol or gasoline, and when started, they in turn supply the heat to warm up the main carriage burner. Also during the stops when the main burner is shut off they keep it hot and ready for use.

One strong argument in favor of liquid fuels on cars is the ease with which they may be controlled by automatic regulators. Before considering these we must say a word on the general arrangement of the driving machinery. The mechanism of steam motor cars may be separated into three divisions—the steam line, the water line and the fuel line. In case of any trouble take the line where you think the trouble lies and follow it through from one end to the other, and if you still are at sea, take the other lines in their turns. Don't skip all over the car looking first on one line and then on another. The steam line has the throttle valve of which there should always be two—the main throttle by which the car is controlled and the auxiliary valve close to the boiler by which the steam can be shut off from the main valve and the piping. If a condenser is fitted the condenser pump and grease separator would properly come under this division. The water line starts at the water tank and runs through the fuel pumps, regulators and vaporizers to the burner. The air pressure mechanism comes properly under this heading.

Safety Devices.

Man is not infallible, neither are the best of automatic appliances. To make up for the lapses of both, numerous safety devices and alarms have been devised. Of the latter the two most prominent are the safety valve and the fusible plug. The name of the former explains itself. When the steam pressure rises beyond the determined point, the valve, which is held closed on its seat by a spring, opens and lets the steam out into the air. The fusible plug is the preventive of damage by low water. It consists of a brass plug which has a hole running through it from end to end. This hole is filled with an alloy of lead that will not melt as long as it is covered with, and kept comparatively cool, by water. If, however, the water be removed, the plug will heat to a point where the alloy melts and the steam blows out and gives warning of low water. The plug should be so placed in the boiler as to give its warning before all the water has been evaporated. It should be located in some part of the furnace where it will be subject to great heat without being in actual contact with the flame. In flash and semi-flash boilers it is unnecessary, as these boilers, from their build, are not affected by an absence of water. In most water tube boilers it can be omitted, but in those having a large drum partly filled with water it should be used.

Under the head of alarms, those referring to the height of the water in fire-tube boilers are the most important. There are two general methods of construction. In the first a float is used so connected with a small steam whistle that, so long as the water level is above the danger line, the float keeps the whistle valve closed, but should the water level fall, the weight of the float falling with it, opens the valve and lets the steam blow the whistle. Another form of this same type, instead of blowing a whistle, sends up a jet of steam in front of the driver. The other method depends upon the different temperatures of steam and water when away from the boiler. It consists essentially of a small tank connected with both the steam and water levels of the boiler, and containing a bulb of mercury at the points of two electric wires. When the water is above the danger level the bulb is covered and kept cool; when the water sinks the bulb is exposed to the heat of the steam and the mercury in the bulb expands and joining the two wires rings an electric bell. These alarms are only necessary on boilers where the loss of water means disaster.

Pumps.

All pumps are either hand pumps or power pumps. Power pumps may be driven from some moving part of the engine, when they are usually called direct-connected; by gearing from some shaft, then called gearing pumps; or by a steam cylinder of their own, when they are called independent feed, air or gasoline pumps, as the case may be.

In current practice hand-pumps are supplied as a reserve, or for use when the carriage is not under steam; power pumps for regular use when under steam and independent pumps either as an additional precaution against break-down of the usual power pump, or to perform services which are only required at intervals but are too heavy for hand power. Under this head would come pumping the pressure in the fuel tank as arranged in some cars.

The most important pump on the car is the feed pump. On the conscientious working of this member depends the progress of the car and the comfort and pleasure of the operator. The usual practice is to drive this pump from the cross-head of the engine so that it makes a stroke for every stroke of the engine. In the dark ages of engine design, when this method was first employed, it worked very well. The stroke was long and the number per minute few, but when the number of revolutions began to rise troubles began, and with the present speeds and short strokes the direct connected feed pump is the greatest nuisance on the car. A far better plan, where the construction of the car will allow it, is to drive the pump by gearing from some shaft or axle; and by suitably proportioning the gearing a slow speed and long stroke may be given, and much if not all the trouble avoided. Independent steam feed pumps, while very convenient, if the power pump gives out, are very large steam users and for that reason are not recommended for the regular water supply.

The feed pump is, of course, part of the water line. Where a condenser is used a pump is needed to pump the water from the condenser to the main tank through the grease filter. The ejector which is fitted in some carriages is for filling the water tank from some outside source. It works on the same principle as the familiar cologne atomizer.

Turning now to the fuel line the problem has many ways of solution. Liquid fuel burners in present practice require their fuel under considerable pressure, varying from thirty to eighty pounds. The earlier method of providing this pressure was to pump air into the main fuel tank until the required fuel pressure was obtained. This method is still used by many makers, but is open to grave objections. The whole body of fuel is under pressure and any leak or break in tank or piping emits a stream of gasoline or kerosene under greater pressure than found in the average water faucet. Possibilities of this stream and the lighted burner are many. In practice very few accidents happen, but, as it can be very easily avoided, the practice of carrying the whole fuel supply under pressure should be emphatically condemned. The only reason that can be quoted in its favor is that the air pressure can be pumped up at intervals and so avoid having an air or fuel pump under continuous operation.

The other method of supplying the fuel which is used by several makers and is gaining in favor is to have a power fuel pump similar to the feed pump and which at every stroke pumps a small amount of fuel into a small pressure tank holding from a half pint to a quart, and from thence to a burner. This system needs a bypass on the fuel line to take care of surplus fuel when the burner is shut down.

Regulating Valves.

Regulating valves consist essentially of two parts, the governing part and the valve. The latter is usually a needle valve, where used to control small quantities, and a mushroom valve where the quantity is large. In a needle valve the moving part is sharply pointed and presses into a tapered seat, allowing a very delicate adjustment, but offering, even when wholly open, a very small passage. The governing part consists of a diaphragm or flexible plate, on one side of which the steam or fluid presses; and a spring which, pressing against the other side, opposes the pressure of the steam or fluid. This diaphragm is connected with the valve by a rod and, according to whether the spring or the pressure is the stronger, the motion of the rod opens or closes the valve. The adjustment of the spring is variable and this, in its turn, governs the pressure required to move the diaphragm.

The pressure regulators are used for bypass valves—water regulators—and, with the fire tube boiler, as fuel regulators. In thermostat valves the motion for actuating is obtained by the varying length of a bar of brass, copper or iron under the influence of heat.

The muffler and feed water heater remain to be considered. The first is to prevent the noise of the exhaust on present condensing carriages. It consists essentially of an enlargement of the exhaust pipe where the steam is free to expand to atmospheric pressure. As the noise of the exhaust is mostly due to the difference in pressure between the exhaust and the air, any method of reducing the pressure will reduce the noise. A feed water heater is what its name indicates and if combined with a muffler saves some of the heat from the exhaust steam, and thus the fuel supply has less work to do.

RADIUM FOR AUTOMOBILE LAMPS NEXT THING TO COME.

According to United States Consul-General Guenther, at Frankfort, Germany, the prospects of obtaining unextinguishable and ever-ready lamps by means of radium, should be almost as bright as that wonderful substance itself. He writes:

"Notwithstanding the difficulty in its production (many tons of ore being required to produce one gram) a radium industry has already developed in Germany and France, and although one gram is sold at a little less than $2,000 the manufacturers are said to have orders for several hundred grams.

"The demand for medical purposes exceeds the supply. Radium possesses all the important qualities of the Rœntgen rays in addition to the invaluable property of being ready for use at any time and furnishing its rays without the employment of apparatus. It has been demonstrated that a small glass tube, not larger than a goose quill, containing a little more than a thousandth part of a gram, is as effective as an expensive and complicated electric apparatus for the treatment of cancer—surpassing the best effects of the Rœntgen rays.

"The ease with which radium can be administered locally, as for instance in the nose and throat, is an invaluable advantage.

"The fact that radium exerts a very peculiar influence upon light emitting bodies has given rise to the hope that it may eventually play an important rôle in the industry of light. A minute quantity of radium is sufficient to produce a strong light from a layer of zinc pyrites, and this light produces no heat, so that loss of energy is avoided. Radium rays, unfortunately, possess the dangerous property of injuring the human skin by producing severe burns."

Correspondence

Steam Cleaning of Automobiles.

Editor THE AUTOMOBILE:

The writer would suggest that auto repair men and others who have access to steam pressure, try the ordinary boiler flue-cleaning process of removing grease and dirt from the engine and working parts of the automobile. The writer has a number of times driven his machine up to an ordinary boiler-room and used their flue cleaner, which in some cases is an ordinary steam hose with a piece of gas pipe in the end about two feet long, and with this device blow off all the grease and dirt, leaving the engine as clean as the day it was set up by the maker. The effect of the hot steam at high pressure is astonishing. Any ordinary machine can be made absolutely clean in five minutes, which will enable the average workman to make his repairs in half the time that he could do the same work in if the machine were covered with grease half an inch thick.

HARRY E BURT.

Battle Creek, Mich., Dec 12.

The Cemetery Question.

Editor THE AUTOMOBILE:

In giving my views of automobiles entering cemeteries, I wish to emphasize the need of going slowly, and being on the alert for any horse showing the slightest indication of danger.

The writer has frequently visited some of our largest cemeteries and found it wise to avoid coming in contact with carriages in such a place, the by-ways through a cemetery usually affording ready escape from any danger. Every gentleman driving an automobile should be prepared at a moment's notice to stop, turn off power and assist any one in a carriage drawn by flighty horses. Do not think you can chance accidents; it pays to be friendly and show consideration for others.

GEORGE E. RHEDEMEYER.

General Manager Harleigh Cemetery Association.

Camden, N. J., Dec 10.

Doing Chores with Light Motor.

Editor THE AUTOMOBILE:

Would an automobile gasoline engine be as serviceable for grinding feed, pumping water, etc., as a stationary gasoline engine? Would it last as long as the latter?

OLE O. KRAVIK.

Marietta, Minn., Dec. 12.

There should be no difficulty in employing an automobile gasoline motor for the uses referred to. In France De Dion et Bouton make pumps driven by their high-speed gasoline motors. It may be advisable, however, to throttle the automobile motor constantly for such work to reduce speed and generation of heat. If a water-cooled motor is contemplated it may be well to increase the size of the circulating pump, considering that the work is stationary and no benefit is obtained from moving against the atmosphere. An air-cooled motor should be equipped with a fan or blower for the same reason. Usually the material and workmanship in an automobile motor are superior to what is found in the stationary motor, and it should last as well, if not used to its full power capacity, which is of course much higher than in a stationary motor per pound of metal. The refinements in motor construction introduced through the automobile are gradually finding their way to marine and stationary motors also, and shortly, it may be expected, the differences between automobile motors and those used for stationary but portable work (in which light weight is desirable) will be only nominal.

Increasing Runabout Power.

Editor THE AUTOMOBILE:

As a subscriber of THE AUTOMOBILE, I take the liberty of asking if the advice to H. W. Dorman, page 553, issue of November 21, would apply to my car, photo of which I enclose. It now has a 6-hp. single cylinder motor and planetary transmission, both too light for our heavy hills. So I think of getting a 12-hp. Brennan motor, double-opposed cylinders, the weight of which is little if any more than motor now used. Would the strain on chain and carriage be any greater on a hill, using high speed than on the low? Would not a 12-hp. motor be safer on hills, as danger of being stalled and running back would be less? C. W. HARRIS.

Scranton, Pa., Nov. 23.

We should be very reluctant to advise any one to double the power in any automobile of regular manufacture. If changing the sprockets in your machine does not remedy the trouble, you are safest to conclude, not that the motor and transmission are too light for the rest of the car, but that the whole machine, power and running gear included, is unsuited for your hills. No machine should ever be used in a hilly country without double-acting brakes that will hold it on the steepest hill.

The strain on chain and running gear at any time is determined, not by the gear engaged, but by the resistance encountered at that moment, and the diameter of the rear sprockets in relation to the size of the driving wheels of the vehicle.

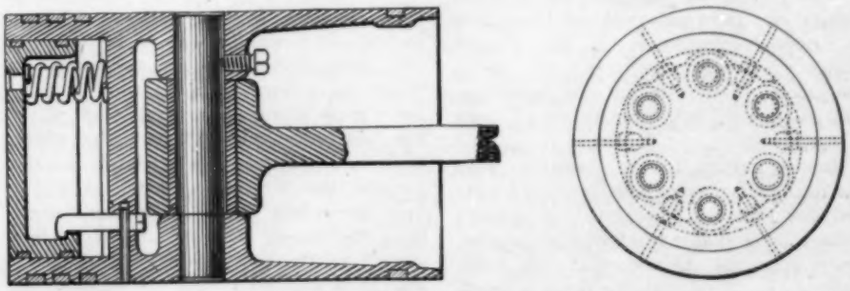
Cushioned Trunk Piston.

The Branch cushion trunk piston for gasoline engines, invented by Jos. G. Branch, chief inspector of boilers and elevators for the city of St. Louis, consists virtually of a secondary piston *B*, forming the head of the main piston *A*. It is held in position by compression springs *C*, which are guided by the pins *D* riveted into the secondary piston *B*.

To prevent the compression springs *C* forcing the piston *B* out of its receptacle in the end of the main piston body *A*, a number of hooks *E* hold same by an inner bead, shown in the cut.

When the secondary piston is first placed in the main piston, the pins *F* are not yet in place, and the hooks *E* are turned toward the center, thus permitting the piston *B* to assume its proper place. Then the hooks *E* are swung around, and fastened in place by the pins *F*.

The compression springs *C* are of such strength as not to allow any movement of *B* during the compression of the charge,



BRANCH TRUNK PISTON.

thus in no way interfering with the compression; that is, they are of such size as not to allow the cushion plate to move by the pressure which is exerted on it due to the compression of the charge. The heat in the cushion chamber is found to be not great enough to affect the especially tempered springs, which are of highly tempered composition metal.

When ignition occurs, the secondary piston *B* gives, and in so doing eases the impact of the sudden thrust on the piston *A*.

While it is designed primarily for single-cylinder engines, the Branch cushion trunk piston, if successful, should prove an advantage as used in multicylinder engines, since its aim is to relieve the motor throughout of the excessive jar and vibration which are drawbacks to the internal combustion engine.

The Branch piston is being marketed by The National Oil Burner & Equipment Co., St. Louis, Mo., which concern states that the piston has been given a most successful and severe test.

American Development of Cellular Coolers.

It is interesting to note the rapidity with which the cellular type of cooler has come into favor in this country. It has been in vain to argue that it is wrong in theory and unmechanical. In spite of this it has come and if we are not deceived, come to stay. What excuse, then, has this type of cooler for its present very general use; for it must be evident to all who have carefully observed the development of automobile design during the past summer that the so-called "square front" and cellular cooler are features of the leading models thus far brought out.

To say that this movement is simply an attempt to imitate foreign makers is only to avoid the question, and does not explain in the least why cellular coolers have come into use either here or abroad. It is true that this type had its inception in a foreign country, and became quite generally used in a variety of forms, both on the Continent and in England before the attention of the leading manufacturers here was seriously devoted to its development. But, having once taken hold of the matter we have done more than merely to imitate; we have developed and improved the type until to-day the lightest and most practical cellular coolers are undoubtedly made in the United States. Nor will the matter stop here; the process of developing and improving will go on until little remains to be done along this line.

But to return to the question, why has the cellular cooler superseded the tube and disc radiator to so great an extent? Some will say that it is a fad; that popular fancy approves it, and that the trade demands it. Undoubtedly there is truth in this, for sentiment always plays a large part in the influence of popular demand for a thing, and automobiles, like other things, are made to sell.

But this is at best only a superficial answer, and while true to a degree, leaves much unsaid, for popular demand is rarely based upon sentiment alone, and what the trade demands must contain within itself some reason for its existence.

Comparison of Radiation Areas.

Let us then compare the cellular cooler with the disc radiator. In making this comparison the writer has taken what he considers the best cellular cooler of American make, because it is lighter, more efficient and more practical than anything offered by foreign makers. It is probably the lightest cooler made, having nearly two square feet of water surface per pound of gross weight. In comparing this with tube and disc radiators, it must be remembered that every square foot of surface is in contact with both water and air. A cooler made of tubes and fins may *appear* to have more radiating surface per pound weight because *both* surfaces of the fins are figured in the total; while the cellular cooler figures only *one* side. The actual *water* surface of the tube and disc radiator, whether made in the customary form of a coil of round tubing or made up of flat tubes extending between top and bottom headers, consists of the tubular surface only, regardless of the form or arrangement of fins employed, and is necessarily very small per pound gross weight, probably in no case more than one-half that of the cellular cooler in question. Any comparison between the surface of disc radiator and cellular coolers, therefore, is misleading, whether purposely or otherwise, unless the above facts are taken into account. It is an actual fact that the adoption of the cellular cooler has reduced the total weight of the cooling system in many cases to one-half of what it was when using the old-fashioned disc radiator.

Function of the Fan.

The same considerations apply when comparing the water surface per square inch front of these types. The cellular cooler examined contained forty square inches of water surface per square inch front, figuring upon a thickness of four inches. It is not possible to construct a disc radiator even with flat vertical tubes which can present so large a water surface for a given front area. And since all of the heat must pass through the water surface, it is clearly a better basis of comparison than air surface, much of which may be useless owing to its remoteness from the source of heat. All of the air surface in the cellular cooler is effective since it is separated from the water to be cooled only by a thin sheet of metal, and is not remote from the source of heat, as is the case with one-half of the radiating surface of a disc radiator.

In actual practice the disc radiator if large enough and supplemented with a good sized tank of water has usually given fair results. But the common experience is, that the water boils away and the tank must be refilled quite often. On the other hand, when the cellular cooler is of the right size and properly operated, its two or three gallons of water should last for 500 to 1,000 miles. The writer was recently told by an enthusiastic automobilist that he had not replenished the water in his cellular cooler for over thirty days of almost constant use.

The proper operation of a cellular cooler involves the use of a fan of one sort or another. Roughly speaking, the fan takes the place of the extra tank of water. When the car is moving at high speed, the air pressure in front produces sufficient draught through the cells to cool the water so that the fan is useless, and is in fact, running practically idle and absorbing little or no power.

But when the car is moving slowly through bad wheeling or up hill, or when standing idle, the small quantity of water present would soon reach the boiling point and rapidly boil away were it not for the fan which now finds its usefulness in producing draught through the cells by artificial means where natural means fail, and thus the water is kept cool under all circumstances.

Another advantage of using the cellular cooler is that it simplifies the water piping. Connection is made from the bottom of the cooler direct to the pump, thence to the cylinder jackets and back to the top of the cooler, making it easy to avoid steam pockets which are frequently the cause of so much annoyance in a more complicated system. The pump also is now relieved of pressure, its function being merely to keep the water in circulation, which it can do using very little power. Besides this, the ability to dispense with the extra water tank economizes valuable space and enables one to carry a larger supply of gasoline. The cellular cooler also presents a finer appearance on the front of the car than the clumsy looking and often battered affair of tubes and fins.

The early forms of cellular coolers were composed of a nest of square tubes soldered at the edges, the air passing through the tubes, the water in a thin sheet around them. The construction is too familiar to require detailed description here. After this came similarly constructed coolers using round or hexagonal tubes or tubes of curious section, but one cooler was like another except for the shape of the tubes employed. This form of construction was necessarily expensive and it remained for Yankee ingenuity to accomplish the same result by a simpler and more practical method.

Plea for Certain Pattern.

This consists of a series of transversely corrugated flat tubes extending between a top and a bottom water tank. The corrugations of every tube are reversed with relation to the two tubes adjacent on either side, thus forming air cells running from front to back. This form of corrugated tube has many advantages over other forms of construction. It produces a veritable "cellular cooler" in every sense of the word. The continuity of the tubes from top to bottom gives strength, and the zigzag course of the water through the narrow flat water-spaces brings every particle into contact with the air-cooled surface of the cells and insures high efficiency for the cooler.

Successful operation is always the true test of successful design, and it is not too much to say that American made cellular coolers have fully demonstrated their superiority during the past summer.

Joseph E. Lewis, M. E.

Lyman & Burnham 12-HP. Touring Car.

A 12-horsepower light tonneau touring car with seating capacity for five persons has lately been placed on the market by Lyman & Burnham, 70 Kilby Street, Boston. The machinery is the product of the Fore River Ship and Engine Company of Quincy, Mass., and the bodies, which are of wood with aluminum panels, are the work of Chauncey Thomas & Co. of Boston.

The frame is of steel angle iron carefully riveted together, and the engine and transmission are hung by steel plates and angles to this frame. The equipment consists of an upright two-cylinder, high-speed motor placed in front. The cylinders have a bore of 4 1-2 inches. The cranks are set at 360 degress, and are suitably counterbalanced. The splash system of lubrication is used. The throttle control consists of a special form of valve located in the cylinder casting and surrounding the inlet valves on each cylinder and is said to be very sensitive. These valves are worked by a foot pedal. Water circulation is effected by means of a centrifugal pump. The crank case is of a special alloy of aluminum, and has large side plates for easy access to the cranks and pistons.

The ignition is by jump spark through a Splitdorf dashboard coil with vibrator. A feature about the breaker box is that it may be instantly removed bodily from the engine without the use of any tools. The Peugeot plug and De Dion carbureters are used.

The transmission is of the sliding gear type with two speeds ahead and reverse. The gears cannot be thrown in or out without releasing the clutch. One pedal operates the double-acting brake on the rear hubs, another connected to it releases the clutch at the same time. The transmission is simple and runs in an oil bath. An auxiliary brake is provided which is applied by throwing the high speed lever ahead.

The drive is chainless through bevel gears to a live rear axle, which is fitted with American Roller Bearing Co.'s roller and ball end thrust bearings. The wheels are 30 inches, fitted with Goodrich Clincher 3 1-2 inches heavy tires. The wheel base is 78 inches. The springs are semi-elliptic, wide, very long and flexible.

Steering is by means of a Brown-Lipe heavy pattern gear, and the spark shifter and carbureter adjuster are placed on a quadrant under the steering wheel.

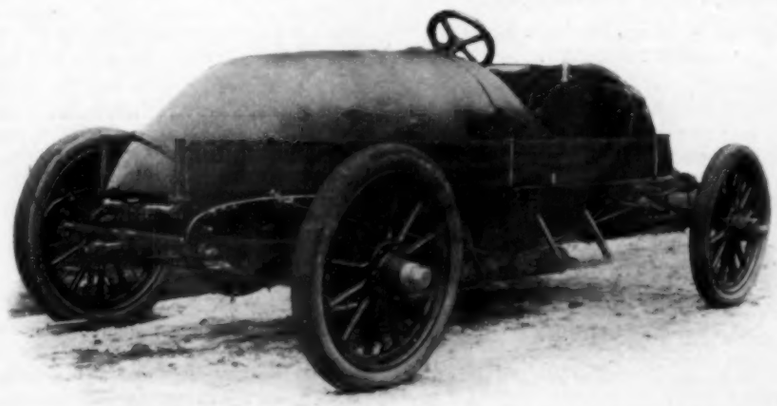
The muffler used makes a quiet exhaust and is furnished with a cut-off valve operated from the seat. It is stated by the makers that this car can negotiate "any reasonable hill" on the high gear with five passengers.

THE LYMAN & BURNHAM TOURING CAR.

Peerless Car for Cup Race.

The 80-horsepower Peerless racing car driven in the Gordon Bennett race last July by L. P. Mooers has been fitted with a special body designed by Mr. Mooers, who is designer for the Peerless Motor Car Co. In all its races to date the car was used in a stripped condition and had a large square radiator in front.

As will be seen in the accompanying illustration, the new body is torpedo-shape both front and rear, and a novel alteration has been made in the radiating system, which consists of a series of quarter-inch copper tubes provided with vertical flanges and extending the full length of both sides of the car. The circulating pump remains as heretofore. The circulating water passes through a T-shaped union at the front of the car and through the radiating tubes to a tank under the rear hood, whence it is sucked through the cylinder jackets.



NEW PEERLESS RACER FOR BENNETT CUP COURSE.

The only other change is the insertion of a reverse gear in the transmission. Mr. Mooers has been testing out the car during the past two weeks and thus far the new radiating system has given entire satisfaction. Just how it will work in hot weather remains to be determined. Mr. Mooers will probably take the car to Daytona, Florida, but has not fully decided whether he will operate it himself or allow some one else to handle it.

New Garage in Cleveland.

CLEVELAND, Dec. 14.—One of the largest and best equipped garages in the country will be opened about January 1 by the Ohio Motor Car Company, which has leased for five years the Loew Block on the West side of Erie Street, within a very short distance of the company's present quarters. During the past year the company has occupied a store in the Pythian Temple Building on Huron Street, but the quarters were wholly inadequate for the storage and repair business which the company desired to carry on. Extensive alterations will be necessary, but it is expected they will be completed by the first of the year. The company will make a leader of the Packard this year. Charles A. Post is president and Mrs. Mary A. Post treasurer and general manager of the company. Mrs. Post will have an assistant, T. C. Whitcomb, a veteran in the automobile business.

THE AUTOMOBILE

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SATURDAY, DECEMBER 19, 1903.

IMPROVED NEW MODELS.

From its traveling representatives and local correspondents throughout this country, THE AUTOMOBILE is in receipt of a goodly bulk of information which, while as yet fragmentary, unclassified and incomplete, lends full assurance of great progress in the methods that have been followed in the design, the construction and in the workmanship applied to the manufacture of the new models to be exhibited at the two national and a number of local automobile shows this winter. The improvements seem to be a trifle more pronounced in the quality of materials used than in any other feature, but many cars which heretofore looked rather dumpy and clumsy by reason of disproportions between the massive tonneau, the too-small wheels, grace-forsaken mud fenders and a bonnet built upon apologetic lines and dimensions, have taken on a new and more appropriate dress. The motor-in-the-middle type of car is still holding its own with improvements looking to greater accessibility for motor adjustments and repairs, and a number of well-built motor-in-front cars, with two-, three- and four-cylinder motors, present the thoroughbred appearance coupled with high-class workmanship for which fastidious customers have heretofore thought it necessary to look across the big water. Altogether, there is a comfortable feeling that the show in the Madison Square Garden and the overflow show in Herald Square Hall, next month, may be looked forward to without serious anxiety in regard to the opinions that will be passed upon the majority of the exhibits by European visitors and Americans returning from the Paris exhibition. The reports from the latter, even at this early date, indicate sufficiently that no revolutions in constructive matters have been brewing, and that those who had to catch up with the progress of the world at large have actually had a breathing spell during the past season in which arrears could be made good.

GRAND TOUR TO ST. LOUIS.

The decision of the American Automobile Association, as announced in this issue, to organize and manage a general excursion of motorists to the St. Louis World's Fair, will be hailed with much satisfaction. Nothing that could be done under the auspices of a national organization could serve so well to cement the various automobile clubs together in the bonds of a fraternity as the contemplated informal, yet orderly, massing of club members along the roads for a purpose in which recreation and more serious interest are blended in the most felicitous manner; resembling in this respect the position held by the automobile movement itself as an agency for both utility and pleasure. The formalities and responsibilities of a contest would be *de trop* in this mobilization of automobilists from all sections of this country where clubs exist and which may assume proportions of a magnitude that would defy all attempt to apply contest rules. As visitors to the World's Fair must very largely be of the same class of the population as the owners of motor vehicles, there would seem to be most extraordinary possibilities in the plan that has been adopted. An aggregation of a thousand motor cars or even a larger number, all entering St. Louis on the same day, and carrying perhaps three or four thousand persons, might easily be the result of the energetic work upon which the A. A. A. must enter to ensure the success of the plan.

FIELD FOR GOOD WORK.

If it is considered possible to elaborate a formula that will express the speed capacity of a motor car by its dimensions and weights; another formula which will express what its hauling capacity in ton-miles ought to be; and perhaps a third one indicative of what gradient it should be able to climb at ten miles per hour—our national organization, the A. A. A., and other aspirants for racing and contest control, might, upon second thought, find it within their province to engage technical assistance for ascertaining what may be done for the public good by developing such auxiliaries by which manufacturers and others could form an opinion of the efficiency embodied in various forms of construction. Progress, you know, may after all consist in something different from following the lead of the Automobile Club de France—always one year behind.

A little radium is a dangerous thing. Not only does it upset the mental equilibrium of those who possess its counterpart: a little knowledge; but it burns the flesh of the lucky persons who nonchalantly carry an infinitesimal quantity in a vest pocket, and now we are told from Germany that it may revolutionize the industry in illuminants, since it has been discovered that its very proximity under certain conditions transforms a stolid piece of zinc into a beacon light and goes on doing it forever. Soon we shall hear the enterprising automobile lamps manufacturer announce the "Radium Headlights, the most important discovery of the century; no more trouble with tarnished reflectors or lenses; always in order; costs absolutely nothing after once paid for; indispensable for the motorist."

Our fortunate grandchildren!

While reading up on his favorite old poet, Chaucer, in Appleton's Encyclopœdia, edition 1873, a New Haven devotee of literature stumbled over a definition, or rather explanation, of the word "chauffeur," which was too good to keep. Said this favorite source of knowledge for busy persons:

> "Chauffeurs—A class of brigands during the reign of terror in France. Their headquarters were first in the forests of Orgeres near the City of Chartiers. They infested parts of the country till 1803, when the measures adopted under the Consulate put a stop to their depredations. They garroted their victims and tortured and burned their feet to make them disgorge their treasures. While engaged in burglaries they put a black veil over their faces, or blackened them with soot."

"Can you tell," asked the student forthwith of the New Haven *Leader*, "whether the chauffeurs of to-day belong to this class?" and the *Leader* responded with alacrity, suggesting that "the last original Chauffeur, as he closed the door of opportunity with his last gasp, squeezed through a grain of Chauffeur seed which came to life after many years and is now doing business in modern style, torturing by a more expensive but not less deadly method and with headquarters not in the forests but in the coveted places of civilization, on the State highways and the finest streets of the cities."

In brief comment on so much wit it may be said that the chauffeurs of old were

the charcoal makers who lived in the forests very much like gangs of lumber men lived in their camps in this country before canned goods were common. In all countries the reputation of these charcoal makers was one for sturdy honesty, coupled with unruliness when work was slack. We see a moral in this as to the improvement of the modern breed of chauffeurs: "Keep them down to hard work." Will that suit New Haven?

Every now and then an observing motorist confidently asserts that the power of his engine varies with the intensity of his spark, and particularly that a good. fat spark produces a strong explosion while a lean, bluish spark results in a correspondingly weak impulse. And there is no mistake about it, he says. It is not a case of skipping explosions without noticing it. Take off the muffler and the difference in the exhaust can be distinctly heard. Some time ago this question was debated freely in the French technical press with *savants* arguing both pro and con. Under the assumption that the phenomenon may be based upon variations in the rapidity of flame propogation, an explanation may be attempted. The fat spark probably comes in contact with a larger number of molecules of the explosive charge than the lean one, and as the flame is propagated in a geometric progression—slow at first but rapidly increasing—any addition to the number of molecules fired directly from the spark will materially increase the rapidity of the inflammation. But perhaps, according to this explanation, the reduction in power could be obviated by advancing the spark a little more when weak than when intense.

"The French Chauffeur must go," cries the Denver *Republican* and invokes the contract labor law to prevent automobile owners and manufacturers from importing racing men and mechanics from the home of the Gaul. It claims to have the active assistance of Secretary Cortelyou of the Bureau of Commerce and Labor in this agitation, and intimates that Mr. Cortelyou may become a candidate for president of the American Automobile Association on this platform.

The first of a series of winter entertainments will be held by the Chicago Automobile Club next Saturday night when a smoker will be given to the members of the club, and the monthly meeting held at the same time. Four new members were admitted to the club at its last monthly meeting, at which Sidney C. Gorham was selected to take care of the club's legal interests under the new officers.

The Springfield Automobile Club will hold a show next Spring.

MOTOR BOAT CHALLENGE RACES IN PROSPECT

International Trophy and Championship Pennant to be Offered by American Power Boat Association.—Races Next Spring.

MOTOR BOAT COMMITTEE FOR A. C. A.

At a meeting of the executive committee of the American Power Boat Association, held last Wednesday evening, in New York, it was decided to issue an invitation to the thirty yacht clubs forming its membership to contribute to a fund for the purchase of a valuable silver trophy to be awarded to the winner of an international motor boat race to be held in June or July next, and annually thereafter.

Details regarding the contest were left in the hands of the racing committee for final action, but it was decided that the race shall be held on a course of twenty to forty miles long, either on Long Island Sound or the Hudson River. Competitors in the country must be members of the yacht clubs belonging to the American Power Boat Association, but all foreign owners of racing motor boats will be invited in the near future to enter for the race.

It was further decided to hold a special American championship race for motor boats, to be held on Decoration Day, this contest also to be an annual event. The association will award to the winner a pennant which he will be entitled to display until he meets defeat in a succeeding annual race.

A. C. A. RIPE FOR BOATS, TOO.

At the next meeting of the board of governors of the Automobile Club of America the question of nominating a motor boat committee will be discussed and a committee probably appointed. The members of the club fully realize the importance of this new branch of automobile sport, and feel that the time has come to recognize it, as a number of prominent foreign clubs have already done.

IMPORTER PLACES FORFEIT TO RACE OTHER IMPORTER'S BOAT.

At this early date there is every evidence of an active season next year in motor boat racing. Hollander & Tangeman, American agents for F. I. A. T automobiles and motor boats, issued a challenge on Thursday to Smith & Mabley, owners of the fast boat, the *Vingt-et-Un*. This challenge reads as follows:

NEW YORK, December 16, 1903.

Smith and Mabley,
New York City.

Gentlemen:—Having read the various articles which have appeared in the local press con erning your racing motor l unch of 21 hp., and with a sincere desire of developing and encouraging in a more general way the sport of motor boat racing, we hereby challenge you to race the boat which made the records claimed in articles referred to, and which you have named "Vingt-et-Un," to race our F. I. A. T. 24 hp. under the rules for time allowance of the American Power Boat Association for $1,000 a side, between the dates of March 15th and May 15th, 1904, and for any distance from 20 to 50 miles on the Hudson River or Long Island Sound.

We have deposited one-half of the above mentioned amount, namely, $500, with S. M. Butler, 753 Fifth Avenue, New York, and shall be pleased to hear when you have covered same; the balance, making a total of $1,000, to be deposited by both parties two weeks before the date set for the race to be hereafter agreed upon. Whichever side fails to appear at the starting line on the date fixed upon for the race, shall forfeit the original deposit of $500 to the other side. The race to be held under the auspices of the American Power Boat Association, and governed by their rules.

We sincerely hope you will accept this challenge in the spirit in which we have issued it, namely; to promote a general interest in motor boat racing in this country, and to bring this department of the automobile industry into greater prominence with the general public.

Very respectfully yours,
HOLLANDER AND TANGEMAN.

Recent Incorporations.

Auto Import Company of New York, to manufacture and deal in automobiles, capital $60,000. Incorporators, Max S. Hamburger, Royal E. D'Orville and Hyman M. Wise.

Arlington Heights Automobile Co. of Fort Worth and Arlington Heights, Texas, capital stock $3,500. Purpose, the operation of a line of automobile stages from Fort Worth to Arlington Heights and other places. Incorporators, A. T. Byers, C. S. Mattison, William Bryce, M. R. Sanguinet and Robert McCart.

Woolston & Brew of New York; capital $15,000; to make automobiles, engines and motors. Directors, G. F. Woolston, W. P. Brew and L. W. Woolston of New York.

Keystone Motor Car Co., Camden, N. J., to manufacture motor cars; capital $12,500. Incorporators, E. H. Godshalk, C. A. Godshalk, John F. Joline, Camden, N. J.

Roebuck Automobile Company of Brooklyn, N. Y.; capital $5,000. Directors, George E. Roebuck, Samuel H. Roebuck and N. W. Payne of Brooklyn.

Monarch Railway Car Co. at Augusta, Me.; capital stock, $2,000,000, half common and half preferred; to manufacture railway cars and automobiles.

C. G. Norton Co., Milwaukee, Wis.; capital stock, $50,000; to conduct general automobile business. Incorporators, C. G. Norton, G. F. Discher and Harry M. Hannermann.

CLUB TOUR TO ST. LOUIS PROPOSED BY THE A. A. A.

Tourists from Various Clubs to Travel as They See Fit, and Form Camp on Delmar Track Infield.

NUMEROUS ENTRIES ALREADY ANNOUNCED.

At the last meeting of the directors of the American Automobile Association it was decided to send out a call to all clubs and individual members of the Association to participate in a tour to St. Louis some time during the summer of 1904. This run will not be in the nature of a contest, but will be purely and simply a pleasure trip. Each tourist will provide for his own accommodations and will travel as he sees fit. General arrangements, however, will be made by the association and a route will be planned so that the tourists can keep together and meet each night. A trunk line route from Boston through Albany, Buffalo and Cleveland to Chicago, and from there south to St. Louis will be laid out, and various branch routes leading into this main or trunk line will be planned so that clubs from other points can join the main tour and go on with it. It is proposed to lay the tour out in such a way that not more than a hundred miles will have to be covered each day. A leeway of at least three days will be allowed so that in case of inclement weather the tour can be stopped for a day, or two days if necessary, and still reach St. Louis in time for the automobile week which will be arranged. It is proposed to secure Delmar track at St. Louis for a week's racing. Upon the arrival of the tour in St. Louis an automobile camp will be formed inside the track, which will continue during the week of racing. The clubs are receiving the project with enthusiasm and the affair promises to be most successful. A number of prominent tourists have already signified their intention of going and it is believed that a great number of cars will participate in what promises to be a grand triumphal march across the country.

New Jersey Club Makes Favorable Report.

The annual meeting of the Automobile Club of New Jersey was held in Commonwealth Hall, East Orange, on Monday evening, December 14. Officers for the ensuing year were elected as follows: President, George Farrington; vice-president, Arthur Baldwin; secretary, C. H. Gillette; governors, James B. Dill, Winthrop E. Scarritt, A. B. Leach, G. F. Bailey and Dr. A. C. Cristain.

The report of the Legislative Committee, among the principal workers of which were Messrs. Dill and Scarritt, was heard with considerable interest. It covered the work that was done regarding the automobile law, passed by the legislature at Trenton, last spring, and also the effect of the law in operation. According to the committee, the law in its enforcement was most satisfactory, and the only suggestion which the committee had to make in regard to it was one covering an amendment to the law, by which the license numbers of other States should be recognized in New Jersey.

The report of the Contest Committee, covering the annual hill-climbing contest at Eagle Rock Hill, was enthusiastically received and it was voted to continue it as an annual event. Several suggestions were made in regard to more stringent regulations to prevent accidents on the hill and another season it is assured that this contest will be run without any possible danger. It was proposed to close the road to traffic during the time of the contest and that automobiles which have gone up the hill should come down to the starting point by another route.

The Good Roads Committee reported satisfactory progress in its work of securing an improved highway across the Newark Meadows, from Jersey City to Newark. The club has been active through its committee in pushing this work during the last few months and a continuance of this energy in this direction will doubtless bring forth good results during the next few months.

HIGH MARK SET FOR BUFFALO CLUB MEMBERSHIP COMMITTEE.

BUFFALO, Dec. 14.—A new membership Committee was announced at last week's meeting of the Board of Governors of the Buffalo Automobile Club, as follows: F. J. Wagner, chairman; George Robinson, J. B. Eccleston, A. H. Knoll, J. A. Cramer, E. F. Hall and H. E. Crouch.

This committee will make strenuous efforts to bring the membership of the club up to 500 by next spring. The expectation is that it will reach 600 There are 1,200 motor cars owned in Buffalo at present, and President Hotchkiss and other prominent members of the club say they would not be surprised if there were fully 1,200 more next season.

Owing to his election as president of the New York State Association of Automobile Clubs, President Hotchkiss tendered his resignation from the committee on automobile club affairs.

In a report on the recent Syracuse convention, Mr. Hotchkiss stated that particular attention would be paid to automobile laws in this and other counties Mr. Hotchkiss is chairman of a committee appointed to prepare a law for submission to the Legislature this winter. It is the intention of this committee to examine all laws in existence before the drafting of a bill which is intended to definitely end the present trouble over registration, identification and speed limits.

The Board of Governors of the club held a special meeting last Wednesday to elect a delegate to the next session of the New York State Association of Automobile Clubs and Augustus H. Knoll was chosen. The members received and looked over the plans of the new clubhouse, which call for a ladies' room, a room for the Board of Governors, a bath and secretary's office. The house will be ready for occupancy in a few months. The place will be elegantly appointed and modern in every detail.

WASHINGTON AUTOMOBILISTS TO ORGANIZE AGAINST PERSECUTION.

WASHINGTON, Dec. 14.—Preliminary steps toward forming a new organization of the automobilists of Washington were taken last Thursday night, when a number of prominent owners of automobiles met in the office of Fulton R. Gordon and talked over the local situation. The meeting was called by Mr. Gordon, and those who attended were heartily in accord with the organization project and promised their support to any movement looking to the correction of the petty persecutions to which automobile owners have been subjected since the automobile regulations formulated by the District Commissioners went into effect. They want particularly to have the laws enforced with justice and not to have the automobilists singled out for prosecution while other users of the streets go unmolested. Another meeting will be held this week, when it is expected definite steps will be taken to organize the automobilists into a strong association for mutual protection.

Ever since the present automobile regulations were first drafted by the District Commissioners the newspapers of Washington have agitated more drastic regulations, with the result that the prejudice against automobilists has been increased and the automobile business retarded during the past few months.

Massachusetts Club Election

BOSTON, Dec. 12.—At the annual meeting of the Massachusetts Automobile Club, held this evening at the clubhouse on Boylston Street, Elliot C. Lee, of Brookline, was elected president to succeed Colonel James T. Soutter. Mr. Lee is an ardent automobilist, having a half-dozen or more cars of different types in the stable on his Brookline estate. He has a partiality for the steam vehicle and is usually seen on the road in one of this type. The new president is also a worker in club affairs and has served well as vice-president and member of the building committee. The other officers elected were as follows: first vice-president, Frank E. Peabody; second vice-president, Joseph C. Stedman; treasurer, Royal R. Sheldon; secretary, Frederick Tudor, Jr; board of directors and members of the executive committee, James T. Soutter, Dr. F. L. D. Rust, Arthur W. Stedman, Dr. Winfield S Shrigley, Henry Howard, William A. Rolfe, Otto B. Cole, Stephen W. Sleeper, F. Lothrop Ames and Quincy A. Shaw; election committee, C. Frederic Lyman, Hobart Ames and Charles Hayden.

By vote of the club it was decided to postpone reading the reports, with the exception of that of the executive committee, until the January meeting. The report of the executive committee reviewed the work of the past year, and stated that work on the addition to the clubhouse will begin the first of the year. The club now has 169 active members, four non-residents, and two life members. After the business meeting, Charles J. Glidden lectured on his last summer's trip across the Arctic Circle.

Tourney and Parade at Pasadena.

Members of the Pasadena Automobile Club unanimously decided at a recent meeting to enter the Tournament of Roses parade on New Year's Day. Every member of the club and all owners of machines in Pasadena have been requested to enter the parade.

Special features are being prepared for the Tournament Park exercises, such as exhibitions of various speeds, from four to twenty miles an hour. The contestants who most nearly run their cars at the prescribed rate being awarded prizes. Exhibitions of the control of automobiles, stopping at signal and avoiding obstacles, to show their ease of management and operation as compared with horse-drawn vehicles will also be given.

The Pasadena Automobile Club is planning a series of bi-weekly runs of from 60 to 150 miles, taking in the different points of interest in Southern California, and possibly later on the club will inaugurate a system of public tours for the benefit of the good roads fund. Tracy C. Drake has been elected secretary of the club to succeed R. H. Gaylord.

Club Notes.

A preliminary meeting to organize an automobile club has been held in Davenport, Iowa, and a committee appointed to draft a constitution and by-laws.

The Automobile Club of Philadelphia has sent out an urgent notice to its members, requesting them to register their machines. It is pointed out by the club committee on legislation that it has been decided by the city solicitor that the license issued by the Bureau of Boiler Inspection is sufficient to comply with the provisions of the State law as to licensing, and that it is useless for members of the club to strive to enforce their rights under the State law unless they have complied absolutely with its provisions.

A meeting was held in St. George, Staten Island, last Tuesday night to organize an automobile club. Charles A. Shultz was elected chairman and J. Judson Worrell secretary. A committee consisting of W. O. Sprigg, Dr. George P. Jessup, and Emil Poehn, was appointed to prepare a plan of organization. There are about forty automobile owners on the island. It is expected that the club, when organized, will join the New York State Automobile Association and affiliate with the American Automobile Association.

The Automobile Club of the University of Pennsylvania held its first meeting on Monday, December 1, in Houston Hall, Philadelphia. A constitution was adopted and the following officers were elected: President, F. H. Scott; vice-president, A. E. Carpenter; secretary, G. B. Fletcher; treasurer, C. Christman. During the evening it was suggested to form an intercollegiate association of automobile clubs, and Secretary Fletcher, 216 North Thirty-fourth Street, Philadelphia, is anxious to correspond with the secretaries of other college automobile clubs with that object in view.

BUFFALO AUTOMOBILE TRADE ASSOCIATION PERMANENTLY ORGANIZED.

BUFFALO, Dec. 14.—The automobile trade of Buffalo was permanently organized at a particularly enthusiastic meeting held in the banquet hall of the Hotel Iroquois last Friday afternoon. The majority of those interested in the industry here were present. This organization was temporarily formed on October 22, last, under the name of the Buffalo Automobile Dealers' Association. At another meeting held a week ago, a committee was appointed to draw up a constitution and by-laws. This was submitted to the meeting Friday and adopted. The constitution changes the name to the Buffalo Automobile Trade Association. The membership consists of two classes, active and associate. The former is made up of those engaged in the manufacture or sale of automobiles in and about Buffalo, and the associate membership consists of those engaged in the manufacture of automobile parts or accessories. The election of officers was spirited, two tickets being placed in the field, and resulted as follows:

President, E. R. Thomas; vice-president, Roy Pellitier; secretary, Dia H. Lewis; treasurer, John Gibson. The executive committee is composed of the president, vice-president, secretary, treasurer and E. C. Bull, J. B. Eccleston and P. W. Eigner.

The membership committee, which is a standing one, is composed of John Frey, U. E. Ripper and C. W. Roe.

A Big New Garage in 'Frisco.

SAN FRANCISCO, Dec. 5.—The Mobile Carriage Company of San Francisco, which was incorporated over a year ago for conducting an automobile passenger service, some time ago purchased the interests of the Mobile Company of America on the coast. It has now secured the California agencies for the Pierce Arrow and Pierce stanhope, and for the Northern runabout and has in course of construction one of the largest automobile houses and garages in the country, with a frontage of 137 1-2 feet on Golden Gate Avenue, one of the principal boulevards, 120 feet on Gough Street and Jefferson Square, and 137 1-2 feet on Elm Avenue. The building will be one story high of Grecian style architecture. It will have a ladies' parlor and reception room with private lockers, and a men's clubroom.

The automobile passenger service has been increased by adding a carload of Santos Dumont touring cars and Fredonias to a large number of steam cars already in use.

English Medals for the Olds.

A cablegram received last week by the Olds Motor Works in Detroit from Jarrott & Letts, London agents for the Oldsmobile, announced that in the recent British 1,000-miles reliability trials, two Oldsmobiles were awarded first and second prizes, gold and silver medals, respectively. No other car in the same class received an award, although the Olds were in competition with a score of machines costing $1,000 or less from England, France, Germany and America. The gold medal was awarded for the best, and the silver medal for the second best car in the class in the trials, points being marked on appearance at the conclusion, quantity of dust raised, brake efficiency and noise, as well as upon the number and length of stops made in each day's run and the hill-climbing ability of the car. The silver medal was for the car making the second best score in the class. There were eight days' run from the Crystal Palace, London, out and back, averaging 125 miles each. During three days the weather was rainy and throughout the roads were hard on tires.

Dwight B. Huss of Detroit, drove the Olds that won the gold medal. He is now in Paris attending the automobile show, where the Olds Motor Works is the only American exhibitor.

There are reported to be about 300 Oldsmobiles in use in England.

Receiver for Boston Auto Express Co.

BOSTON, Dec. 14.—H. S. McPherson, a Boston attorney, was last week appointed receiver of the Boston Auto Express Company, by the United States Circuit Court, and is now in charge of the business. It is understood that the company's business will be carried along as heretofore. The company has been doing a large business in the parcel delivery line and has apparently been successful. It is said that dissension on the part of a minority of the stockholders, rather than any financial trouble, is the cause of the receivership. Whether or not the company will be reorganized is not known. The officers of the company are: president, Hugh G. Brown; treasurer, E. P. Morse; and director E. O. Fitch. The main office and garage is at Park Square and there are branches in Dorchester, Chelsea, Somerville and Brighton.

Patents

Carbureter.

No. 745,063.—Peter Jenness of Philadelphia, Pa.

Fig. 1.—When hand-actuated lever 19 is moved, it turns shell 16 which regulates both the quantity of air entering the carbureting chamber at 14, and the quantity of mixture passing to the motor through port 26. By the connection of threaded stem 22, with the internally threaded hub of shell 16, the gasoline valve 23 is

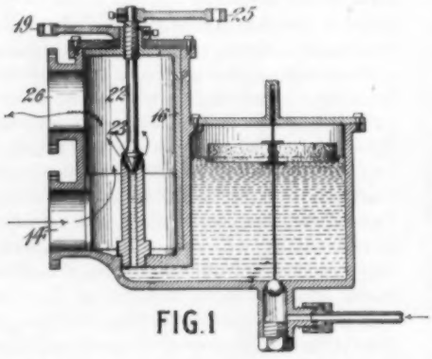


FIG. 1.

simultaneously operated in conjunction with 16, so that a maximum or minimum quantity of air and gasoline may be admitted to the mixing chamber, according to the will of the operator. Arm 25 is governor-actuated, causing gasoline valve 23 to automatically adjust itself so that the required quantity of gasoline and no more will be admitted.

Illuminating Gas Vaporizer.

No. 744,877.—E. D. Parrott of Portland, Oregon.

Fig. 2.—Air entering through pipe 19, in varying quantity according to position of sleeve 21 over admission holes 20, is thoroughly saturated with gasoline because it is obliged to travel a considerable distance through the gasoline under extension 16 of float 15, which is perforated near its edge to form the only escape for the air. The air is diffused over the whole under surface of plate 16 owing to downward projecting ribs attached radially to its under side. A constant level is maintained in vaporizing chamber 2 by action of float 15, which actuates gasoline valve 26, admitting more or less gasoline from reservoir 1, as the float rises and falls. The reservoir is filled at opening 6, the gasoline flowing through orifice 8. Any contained water settles to the bottom and may be drawn off at cock 5.

Pneumatic Tire.

No. 745,040.—T. J. Cooper of Paterson, N. J.

Fig. 3.—A single tube pneumatic tire, the air chamber of which is divided by a solid flexible partition, the two parts being inflated simultaneously by means of a pump attached to the usual air valve, which communicates with each chamber by a two-way channel, each passage of which is closed by a simple clapper valve 20. This construction provides a means to prevent total collapse of the tire if one or the other air chamber is punctured.

Ignition Plug.

No. 745,102.—Johann Geisslinger, Nuremberg, Germany.

Fig. 4.—An insulating porcelain is screwed into a metal shell, asbestos packing at *l-l*, making tight joints. The

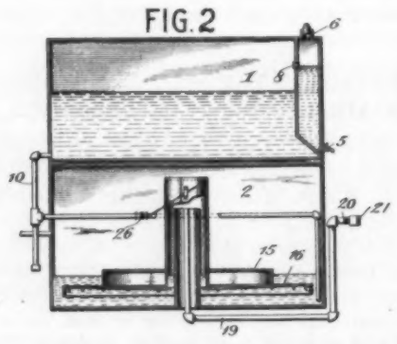


FIG. 2.

insulated terminal wire is screwed into a metal block which is screwed into a recess in the porcelain. Another plug, which carries the binding post, is screwed into the recess, also, a space separating the two plugs forming a spark gap.

FIG. 3.

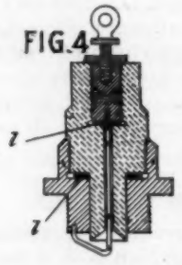


FIG. 4.

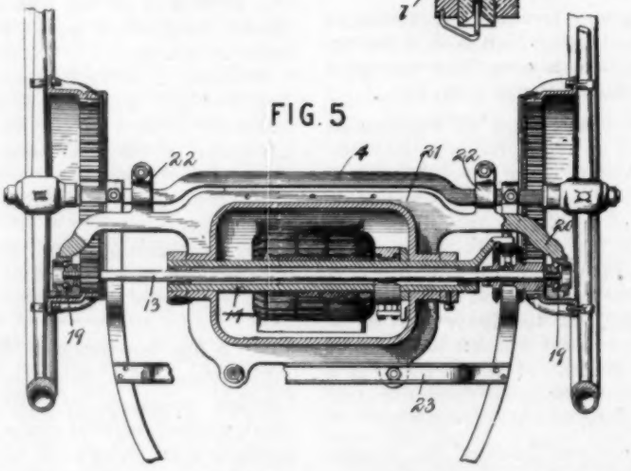


FIG. 5.

Flexible Vehicle Driving Mechanism.

No. 744,434.—Paul Synnestvedt of Glenview, Ill.

Fig. 5.—A driving mechanism wherein the motor is mounted on axle 4 in suitable bearings 22, and supported forward on spiral springs held in position by bolts passing through cross frame member 23, assuring flexibility, at the same time permitting the use of end-supporting bearings for the driving shaft 13 and tubular driving shaft 14, in addition to the usual motor bearings, all four bearings being at all times in rigid and accurate alignment. The outside bearings 19 are held in arms 20, extending from the motor frame 21, which project within the internal gears which are fixed to the driving road wheels. This construction makes it possible to remove either driving wheel without interfering with the driving shafts or their outermost bearings. If very small driving pinions are used, of less diameter than the outer bearing supports, these supports may be cut away at the point nearest the internal gears, so that the driving wheels, together with their internal gears, may still be removed without interfering with other parts of the mechanism.

Accumulator Plate.

No. 745,274.—F. W. Buhne of Freiburg, Germany.

Fig. 6.—To secure maximum porosity felted metal, presumably lead, is lightly compressed into a supporting frame. The process of manufacturing the felted metal is the subject of United States patents Nos. 662,392, and No. 684,043, granted to the same inventor.

Spoke for Vehicle Wheels.

No. 743,665.—Charles L. Schwartz of Philadelphia.

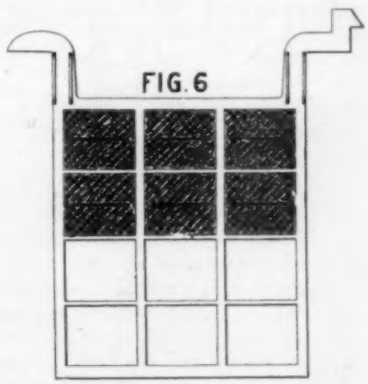
Fig. 7.—The inner end of each spoke is formed with a mortise groove on one side and a tenon on the other, the outer face of the mortise and the outer face of the tenon being parallel with each other, and

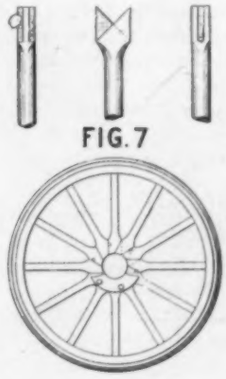
intermeshing with a contiguous spoke to form a strong wheel.

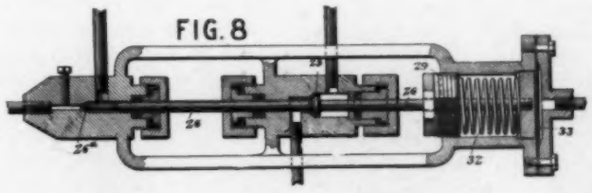
Automatic Water and Fuel Feed.

No. 743, 661.—James N. Rice, deceased, Sarah E. Rice, administratrix, of Scranton, Pa.

Fig. 8.—Water admission valve 25 and gasoline needle valve 26a are both mounted on valve stem 26, and the two valves are held open, normally, by spiral spring 32. Steam is admitted above diaphragm 33, and when its pressure overcomes the resistance offered by spring 32, valves 25 and 26a are closed, thus cutting off the gasoline







feed to the burner and the water feed to the boiler, simultaneously. The boiler now stops generating; the steam pressure falls until a point is reached where spring 32 again asserts itself, forcing valves 25 and 26a open, whereupon gasoline is again admitted to the burner and water to the boiler, until the increasing steam pressure again cuts off the feed. The device is regulated to cut off at a predetermined steam pressure by means of the nut 29, which may be turned to increase the force of spring 32, or the reverse.

Vincent G. Apple of Dayton, Ohio, has registered the word "Steelmobile," at the Patent Office in Washington, as a trademark to distinguish goods of his manufacture.

A handsome automobile show room and office has been opened in Utica, N. Y., at John and Catherine Streets, by the Miller-Mundy Motor Car Company, for the sale of Winton, Pierce, Autocar and Columbia gasoline cars and Columbia and Waverley electrics. The concern continues to maintain its uptown garage at Oneida Street, which will be run in connection with the new downtown salesroom.

News Notes and Trade Items.

C. A. Duerr & Co., New York agents for the Ford cars, have changed their firm name to Duerr, Ward & Co.

A certificate of organization has been filed at Hartford, Conn., by the Hasbrouck Motor Works, Inc., of Groton, N. Y.

During the first four days following the going into effect of the new automobile license law in Detroit on December 1, the police department issued 278 licenses at $1 each. Nearly 1,000 have been issued to date, of which about one dozen were for women operators.

At a recent meeting of the Manufacturers' Club of Buffalo, George N. Pierce, president of the Geo. N. Pierce Company, was elected president.

Contract has been let for the erection of a three-story brick building at 908 Texas Avenue, Houston, Tex., to be occupied by E. W. Hawkins as an automobile establishment.

George M. Holley has resigned his position with the Holley Motor Company of Bradford, Pa., and will take up the manufacture of a new automatic carbureter, which is described on another page.

A dividend of 18 1-2 cents on the dollar has been paid by W. Holt Apgar, receiver for the Munger Automobile Tire Co. of Trenton, N. J., whose total indebtedness was $10,246.33.

The General Electric Company has been engaged at one of its stations in Lynn in conducting some important experiments in motive power for automobiles. The company has had built a gasoline-electric tonneau car, which has excited much interest among the engineers who have seen it. It is said to be a radical departure and to have made 100 miles without trouble.

The F. F. Avery Automobile Company's building, in Columbus, O., was burned early on the morning of December 5, entailing a loss estimated at $60,000. Thirty automobiles stored in the building were destroyed.

A new Rambler car was recently shipped from the Kenosha factory to Bombay, India, to H. C. Muller of New York, who is touring the world, and will introduce the Rambler in many places where the automobile has never been seen.

The power transmission system employed in the vehicles of the Union Truck Company of Philadelphia has been adopted in slightly modified form by A. Dougill & Co. of Leeds, England, and Rudolf Hagen & Co., of Cologne-Mungersdorf, Germany.

Dr. William M. Rhoads, of Cincinnati, who is touring the country in an automobile, accompanied by Mrs. Rhoads and a machinist, recently arrived in Albuquerque, N. Mex., en route from Denver to San Diego, Cal., via the Grand Canyon of the Colorado.

The Essex County (N. J.) Park Commission is to be petitioned to straighten the Eagle Rock hill road and to eliminate the sharp curve at the beginning of the course so that the flying start in automobile climbing contests can be made more safely.

Edward Browne, a bicycle and sporting goods dealer at 413 Main Street, Paterson, N. J., has secured the agency for the Cadillac car and is altering his store to conduct an automobile storage and repair business. He will also carry a line of tires and accessories.

The Ansonia Motor Car Co., 1964 Broadway, New York, has taken the New York agency for the automobile searchlights and equipment made by the Rushmore Dynamo Works of Plainfield, N. J., and will carry a large stock of searchlights of all sizes, generators and spare parts for immediate delivery.

The Jones-Corbin Automobile Company, 31st Street below Chestnut, Philadelphia, has purchased the entire property of the old Jones-Corbin Company and is now building the little Jones-Corbin cars that were put on the market during 1903, and is also bringing out a new 16-horsepower two-cylinder car which will be displayed at the Madison Square Garden show next month. The new company has retained the services of G. H. Jones as constructor and W. H. Hinchvar as manager.

L'Automobile is the name of a new Parisian publication edited by Gaston Sencier, whose name has been connected with *La Locomotion Automobile* and subsequently with *La Locomotion*, L. Baudry de Saunier's paper now known as *La Vie Automobile*. The new paper is partly technical and partly devoted to the sport. It is a weekly luxuriously printed at 7 Rey Saint-Benoit.

After January 1 every British motor car owner, according to the new British law on the subject, will be obliged to pay about $10 as a national license fee, $5 for registration in his county or municipality, $1.25 for an operation permit, the same sum for his hired chauffeur, if he has one, and $2 for a number to be attached to his car. Besides, his chauffeur will cost him about $5 in the form of a tax on servants.

F. J. Phelps, president of the Minneapolis Automobile Club, is planning a European automobile tour for himself and his family next spring. He will go to Springfield, Mass., early in January, and from there will travel to Boston in his Knox touring car. From Boston he will sail for France, where he will meet his family and start out on a tour of the continent.

The St. Louis Motor Carriage Company, of 1211 North Vandeventer Avenue, St. Louis, Mo., has just finished a new storage and repair station which it will open in about a month and expects to take care of all the World's Fair livery business next year. The company is installing new machinery and will be prepared to do anything in the automobile line from making ordinary adjustments and repairs to building an entire machine.

A cable dispatch to the New York *Sun*, under date of December 10, states that "Reliability tests of automobiles will be run in September by the Oldsmobile Company. Gold and silver medals in the class for cars costing $1,000 will be given. Nineteen competitors have entered for the competition." It is presumed that if this is not a garbled report of the awards made in the club trials last September, as published on another page, it refers to some open challenge issued by Jarrott & Letts, agents in London for the Olds.

A line of air-cooled cars is being made for the season of 1904 by Rodgers & Co. of Columbus, O., who will have their full line and models of their new engines upon exhibition at the New York and Chicago shows. Among the styles to be shown are a runabout, a delivery wagon and a closed coupe with glass panels and doors. After experimenting with water-cooled motors this concern has adopted the air-cooled engine and has devised an efficient cooling method. Its engine and chassis are strongly built after attractive designs. The company is well equipped for the manufacture of these engines and cars on a large scale.

A compilation of the import duties leviable on automobiles in the British possessions and in European and western Asiatic countries, and in Egypt, China and the Philippines, has been published in the British *Board of Trade Journal* and reprinted in the United States Consular Reports for November 19, 1903.

The rates quoted do not necessarily hold good for American exports, as some of the countries have "favored nation" clauses in their tariff legislation.

Syracuse owns the distinction of being the only American city containing a pawnbroker who has been asked to loan money on an automobile. When the cash was placed in the hands of the fur-coated driver, it is reported that he went away leaving the puzzled pawnbroker deliberating on how he was to store the car in his crowded quarters, a problem finally solved by engaging a machinist to dismember it, when the parts were compactly stowed away.

Bernard Besseling, an automobile manufacturer who arrived in New York three weeks ago to buy American vehicles for export, has been reported missing to the Hoboken police, who have begun a search. Last Thursday Besseling left his hotel in Hoboken to draw money from a bank, where he had $14,000 deposited, to pay for two combination gasoline-electric automobiles he had bought from the Fischer Automobile Company, and has not been seen or heard from since.

An electric automobile ordered by the Board of Fire Commissioners for the fire chief of San Francisco was delivered recently. It is of 16 horsepower and has a guaranteed speed of twenty miles an hour. It weighs about 3,200 pounds and is capable of climbing a 20 per cent. grade. It has double brakes and is fitted with a searchlight that can be detached and used to explore the interior of a burning building. The vehicle will receive an official test in the presence of Fire Chief Sullivan and the fire commissioners before being accepted.

H. C. Porter, of Waukegan, Ill., left there last Saturday with an electric automobile which he is taking to Washington, D. C., where he will attempt to make a record mileage on one charge of the battery. Two years ago Mr. Porter made a run of 187 1-2 miles on one charge, and the next best record stands at 108 miles. Owing to several important improvements that have been made in the Porter battery, he expects to break his previous record by a good margin on the asphalt streets of the national capital, where snow will not be likely to interfere.

On Austrian railways, according to *La Locomotion Automobile*, motor vehicles are carried under the same rules as ordinary carriages if three simple conditions are complied with: Gasoline tanks must be firmly attached, must have a drain cock at their lowest portion, must be hermetically tight (metallic closer) and must be completely empty. Storage batteries must contain no liquid acid and must be secured in strong and safely mounted boxes. Fusible plugs and safety contact plugs must be removed before cars can be accepted for transport.

The number of visitors to the World's Fair grounds, St. Louis, is increasing daily, and a line of electric automobile 'buses is already in service for their accommodation. The vehicles stand at the De Balliviere Avenue gate, and when filled make a tour of the extensive grounds, climbing the hill by the art gallery, and traversing the various avenues between the exhibition places. The cost of the round trip is 25 cents. A local company has been organized to operate the line during the World's Fair, and a number of prominent business and railroad men are identified with the enterprise.

In connection with the Paris automobile show now in progress there will be held a competition for gasoline motors and motor vehicles equipped with automatic starting mechanisms. Starting by cranking the motor shaft is excluded, as well as any other mechanical motion designed to turn the motor shaft. Neither must the starting of the motor be accomplished as in multiple-cylinder motors, by the mere switching of electric current to a cylinder containing a compressed charge. The starting mechanism must be a special organ, such as a spring, a battery, dynamo or compressed air mechanism.

The latest "sign of the times" is that of Charles Bilz, automobile dealer of Denver, Colo., who has hung over the entrance of his garage an illuminated electric sign designed by himself. The design is a White steam car two-thirds life size, accurately reproduced in bas relief and painted white on a black ground with the outlines picked out with 160 incandescent electric lights. The light is so strong that all the details of the car can be seen from a distance, and the effect is very striking. The sign may be shipped to New York show for use in the booth of the White Sewing Machine Company.

The Automobile Club de France is deliberating upon means for mitigating the vexations caused by the Parisian city import duties or octroy system, according to which a motorist every time he enters or leaves the city is subject to visitation by the octroy officers to ascertain his gasoline supply, so that he shall not carry any of this fluid into the city without paying duty and so that it may be known how much money he is entitled to have refunded if he leaves the city with a supply on board. The latest proposition is that the octroy authorities issue tickets for 10 litres, 5 litres and 1 litre, to be used instead of money and written certificates in these transactions on the *banlieue*, as the excise boundary is called.